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No. 910

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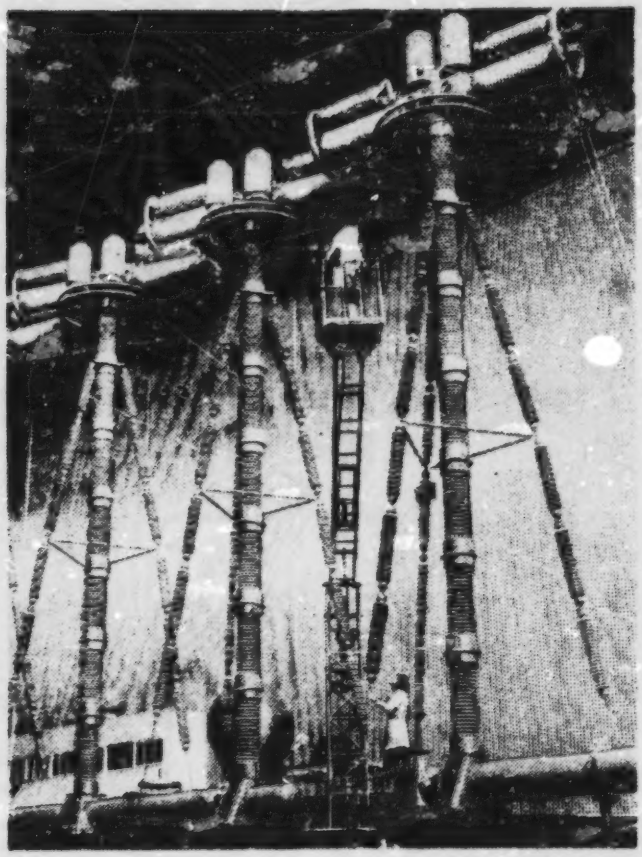
AIR-BLAST MAKE-AND-BREAK DEVICE

Kishinev SOVETSKAYA MOLDAVIYA in Russian 18 Sep 79 p 2

[Article and photograph]

[Text] In the superhigh voltage laboratory of the scientific research institute of the Uralelektrotyazhmash Production Association has been created an experimental model of the largest air-blast make-and-break device in our country, the VNV-1150. It is designed for 1150-kV electrotransmission trunk lines. This make-and-break device was created in close cooperation between designers and investigators of the Uralelektrotyazhmash NII [Scientific Research Institute] and the All-Union Electrotechnical Institute imeni V. I. Lenin in Moscow.



[Caption] VNV-1150 make-and-break device in testing room of superhigh voltage laboratory

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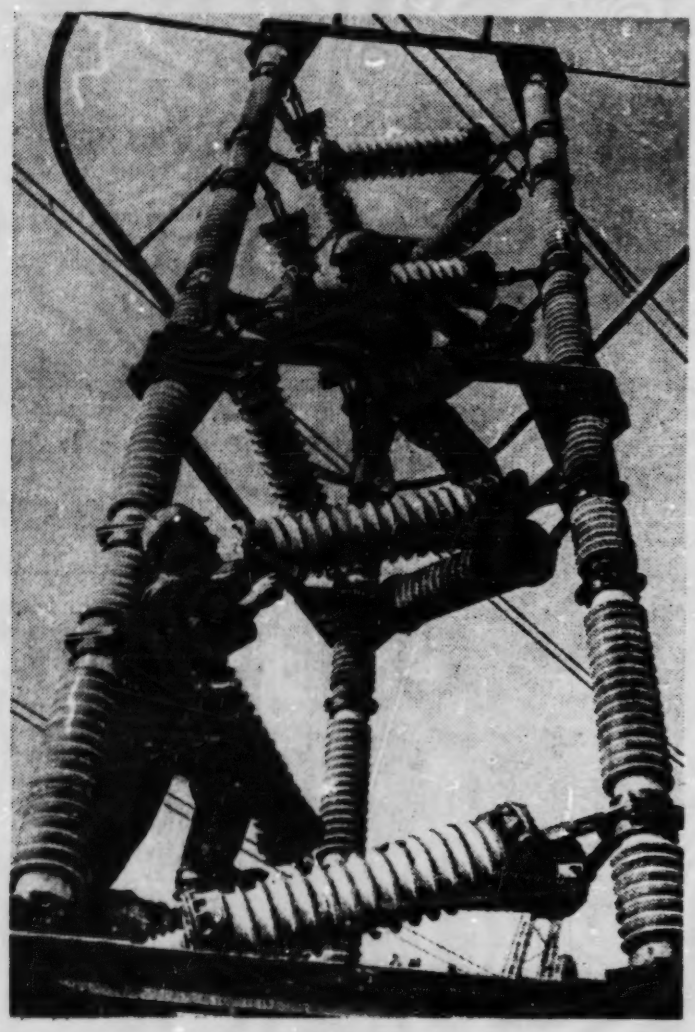
ELECTRIC POWER AND POWER EQUIPMENT

NEW HYDROELECTRIC POWER UNITS PUT INTO SERVICE

Moscow TRUD in Russian 19 Oct 79 p 1

[Article and photo]

[Text] On the eve of the current year, the hydroelectric builders of the Ingurskaya GES reported on the successful fulfillment of their socialist obligations: Three units with a capacity of 780,000 kW went into service. And recently the meters recorded the production of the billionth kilowatt-hour of electric power! Next year the fourth unit of the plant will go into service, and then in the next year, the fifth. The cascade of the now operating hydroeletric power capacities on the Inguri River is producing more than 40 percent of all the electric power produced in the republic.



[Caption] Leading electrical installers I. Nagornyy and A. Antoshkin do preventive work on the 500-kW open-air distributing equipment.

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CENTRAL CAUCASIAN RIDGE ELECTRIC POWER BRIDGE DISCUSSED

Moscow IZVESTIYA in Russian 6 Sep 79 p 2

[Article by S. Afonin: "Proving Ground for Power Engineers"]

[Text] The central ridge of the Caucasus, through whose passes have begun to be constructed 500 kV electrotransmission lines, will become a proving ground for Soviet power system builders.

This was reported by Glavtsentrelektroset'stroy [Main Administration for the Construction of High-Voltage Electric Power Networks and Substations of the Central and Southern Regions] Chief Engineer Yu. Semenov in a conversation with an IZVESTIYA correspondent. "First," said Yuriy Yakovlevich, "it is necessary to note that a power bridge of this capacity, and its length will be 617 km, will interlink the Inguri GES and the Stavropol' GRES."

Why have the passes of the Central Caucasian Ridge been selected? The shortest way. What sort of role will it play in the national economy? It will make it possible to make more suitable use of the free energy capacities of republics of the Transcaucasus, as well as of Krasnodarskiy and Stavropol'skiy krays, and it will improve the power supply for these regions at peak hours.

The electrotransmission line's route will pass through complex mountain sections, in individual areas 2000 to 2300 m above sea level.

The delivery of supports and their installation by the usual method are impossible here; therefore planners have had to solve an entire combination of complex technological problems. To the future route of the power bridge it is planned to construct about 200 km of transport access roads.

In addition, as main access routes extensive use will be made of "mobile" ropeways. They will make possible the effective transfer of gear, materials, supports, wire and fittings to inaccessible stations.

In addition, it has been proposed that the installation of supports and wire in many sections will be done by means of helicopters and aerostats.

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KIRGIZ SSR MOUNTAIN ELECTROTRANSMISSION LINE CONSTRUCTION METHODS TREATED

Ashkhabad TURKMENSKAYA ISKRA in Russian 8 Aug 79 p 3

[Article by Arkadiy Pal', APN [Novosti Press Agency] correspondent: "Electrotransmission Lines in the Mountains"]

[Text] Power engineers of the Kirgiz SSR are carrying out the construction of electrotransmission lines under complex conditions. In the mountains supports must be set up on slopes over gorges. This entails great difficulty and considerable expense, and sometimes is simply impossible. This was the case, for example, at one time on one of the routes in a remote region of the Pamiro-Alay massif. Passing through here now is a high-voltage line which does not have traditional mast-type supports. The builders employed the method of one-way cable suspension developed by Engineer Mark Gleyzer. Insulator chains with wires crossing the gorge are fastened by a cable directly to the rock.

"In spite of the obvious simplicity of this innovation, its introduction was preceded by longterm comprehensive full-scale tests conducted in the Kirgiz SSR and in Tadzhikistan," reports Farid Ramazan, mountain electrotransmission lines laboratory chief at the USSR Ministry of Power and Electrification Kirgiz Scientific Research Division of Power Engineering. "The cable suspension makes it possible to lead LEP's [electrotransmission lines] through the most complex mountain sections and, this means, to furnish with electric power nearly inaccessible regions."

Scientists of the Kirgiz SSR are solving successfully also other important problems relating to the construction and maintenance of high-mountain electrotransmission lines. In particular, they are devoting much attention to studying the effect of wind and glazed frost on LEP's. Without the necessary data available, sometimes planners have imposed unjustifiably high strength margins. Now, obtaining regional charts of atmospheric phenomena, they have the ability to develop electrotransmission lines taking into account real climatic factors.

In the Kirgiz SSR has been created a scientific research station operating in the mountains at an altitude of 3600 m. It is investigating the operating

conditions for mountain LEP's, the capabilities of cable suspensions and the transmission of direct current. Another station located in an area of frequent electrical storms is involved with problems of protecting electrotransmission lines against these storms. It has been discovered, for example, that the mountains act as a particular type of shield for them. And if an LEP is laid in such a manner that the slopes will all the time fulfill their protective role, then it is possible to do without a lightning arresting cable, which in strong winds not infrequently itself becomes the cause of an accident.

In the last 10 years the Kirgiz SSR has become a large producer of electric power. A cascade of 22 hydroelectric power plants has been planned on the Naryn River in the mountains. Three of these are already in operation, furnishing electric power to neighbors, too--Uzbekistan, Tadzhikistan and Kazakhstan.

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ELECTRICAL EQUIPMENT INDUSTRY ECONOMIC RESTRUCTURING EXPERIMENT DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 44, Oct 79 pp 12-13

[Article by V. Astaf'yev, director, Minelektrotekhprom [Ministry of the Electrical Equipment Industry] Economic Planning Administration: "Incentives for Technical Progress"]

[Text] In the electrical equipment industry for 10 years new methods have been developed for planning, financing and providing economic incentives for scientific and technical progress. They have been characterized by a comprehensive approach to improving the system of economic management of science and technology in close connection with improvement of the entire economic machinery.

Continuous Planning

An important element in the system of economic management of scientific and technical progress has become the improvement of planning. The sequence and comprehensiveness in the development of science, engineering and production have been made possible because of the method, developed in the industry, of continuous planning based on production orders and certification of the quality of manufactured products. As the criterion for rating scientific and technical solutions is used the savings produced by the development of a specific subject and the introduction in production of a product or measure.

Intraministry production orders cover all stages of work by subject, have the force of business contracts, and specify the specific performers and completion deadlines, as well as sources of financing and economic incentives. For the purpose of coordination and management, for each subject has been assigned a head organization (an NII [scientific research institute], KB [design bureau] or enterprise), responsible for the fulfillment of quotas as a whole, as well as organizations and enterprises involved for the purpose of completing individual steps.

The basic feature of the planning of new equipment in the industry is the fact that the end result of scientific and technical progress--the savings--has become the object of planning, financing, economic incentives, analysis, accounting and control. Based on the savings, a selection is made for the

purpose of introducing into production advanced types of products and technological processes, the industry's technical policy is established, a determination is made of trends and the proportion between the development of equipment and the extent of the cost, and incentive funds are formed.

The experience of using the method of continuous planning in the electrical equipment industry has demonstrated that its introduction in the industry as a whole and the performance of work according to a unified network schedule make possible a considerable increase in savings. This is achieved on account of the fact that solved in combination are all problems of the "science-technology-production" cycle, and coordination is made possible between work relating to the creation and introduction of new equipment and the appropriate materials-and-equipment and financial support, the timely creation of production capacities, and the formation and utilization of material incentive funds.

Financing of Operations

The new approach to planning new equipment in the electrical equipment industry has required a modification of the procedure of financing measures for scientific and technical progress. The comprehensive nature of research, development and the production of new equipment resulting from the distinctive features of scientific and technical progress at the modern level has been responsible for the need to coordinate the financing from a single source of total operations of the entire "science-technology-production" cycle. For these purposes was formed a united fund for the development of science and technology, formed in the ministry on a profit basis. This has made it possible to refrain completely from appropriations from the State budget, and the industry has obtained a mobile source of capital making it possible to carry out development and introduce scientific and technological innovations in production within optimal periods.

The financing of operations from the fund for the development of science and technology has made it possible to provide unity in the technical, planning and financial management of scientific and technical development and to concentrate the required capital at important stages, which is of major significance for producing high final results. From this came the need for a comprehensive approach to solving the problem of improving cost accounting, and of bringing it in accord with other elements of the economic machinery.

For the purpose of the further development of cost accounting in scientific organizations, a changeover was made to payment for completely finished and accepted work with the simultaneous allotment of working capital to NII's and KB's. The effectiveness of allotting working capital to NII's passed a practical test in scientific organizations of the Soyuzelektrotyazhmash [expansion unknown] VPO [All-Union Production Association]. The initial results speak in favor of the fact that it makes it possible more precisely to carry out measures for saving capital and labor resources, and shortens the inspection cycle and reduces the amount of uncompleted scientific research and experimental design work (NIR and OKR).

Another important trend in improving planning and financing of scientific and technical progress involves the development of scientifically substantiated norms and economic indicators reflecting various aspects of the development of science and technology. The following have become longterm economic norms introduced in the electrical equipment industry:

A norm for profit withholding taxes for a united fund for the development of science and technology as a percentage of the planned volume of product output utilizing comparable prices taking into account the quality and savings produced from new kinds of products.

A norm for determining the amount of expenditures for scientific research, experimental design and technological work, as a percentage of the planned volume of product output utilizing comparable prices, taking into account the quality of and the savings produced from new kinds of products.

A norm for determining wages in science as a percentage of the total expenditures for NIR and OKR.

Material Incentives

Conducive to the development of cost accounting in scientific organizations and at enterprises has been a system of forming incentive funds for the development and introduction of new equipment, which have been established as a function of the real savings received by the customer, as well as in the industry itself on account of measures for technological progress.

The source for the formation of incentive funds has become the profit produced from the introduction of measures for the improvement of the technical and organizational level of production, and the additional profit in the form of a markup on the wholesale price of a new product of the highest quality category. The actual withholding for the incentive fund for the introduction of measures in the area of improving equipment, technology and production organization is done in relation to the actual savings, meaning also the actual savings from a reduction in costs and an increase in profit.

For the purpose of coordinating the separate sections and indicators of the plans of associations (or enterprises) with indicators of technical progress, accounting cards have been introduced in practice in the planning work of electrical equipment enterprises. On these cards are recorded all planned and actual technical and economic indicators relating to the carrying out of measures, in particular, the savings, the savings from lowering costs, the total expenditures for carrying out measures, and the reduction in the number of workers.

Since 1972 in the electrical equipment industry plans for product realization and profit have been established without taking into account incentive markups, and the estimate of plan fulfillment has been made by taking into account markups and discounts on wholesale prices. In planning for the following year

the total markups produced are deducted. The actual amount of realization and profit is reduced by the total discounts.

Markups on wholesale prices serve as a source for above-plan withholding for incentive funds for the total operating results of associations and enterprises. In addition they are the source of incentives for the creation and introduction in production of products of the highest quality category, as well as for the compensation of additional expenses required for the systematic improvement of the quality of new products and maintaining them at the level of the highest quality category.

For the industry as a whole material incentive funds have grown considerably. During 1969-1978 they increased 2.8-fold, including 5.5-fold for NII's and KB's. The dynamics of the material incentive fund as a percentage of the wage fund for NII and KB personnel have had a tendency to increase. For example, in 1969 the material incentive fund as a percentage of the wage fund for NII and KB workers equaled 9.8 percent, in 1975, 15.8 percent, and in 1978, 22.1 percent. This testifies to the increase in the role of scientific organizations in the introduction of new equipment.

Of great importance for the formation of economic incentive funds has been the increase in the proportion of products of the highest quality category and the removal from production of products of second-class quality. According to operating results for 1978 the industry's industrial enterprises increased incentive funds by more than 10 million rubles on account of overfulfillment of the plan quota for a growth in the production of products of the highest quality category.

Results of the Experiment

The comprehensive approach to organization of the management of scientific and technical progress and production in the electrical equipment industry has made it possible during 1969-1978 to increase total industrial production by more than 2.8-fold. Labor productivity during this period increased 2.2-fold. During the time the experiment was conducted the work cycle from investigatory and applied research to the mastery of products was shortened for the industry as a whole by a factor of 1.5- to twofold. The savings for the national economy in 1978 increased 5.2-fold as compared with 1968.

The mean annual rate of growth in products of the highest quality category equaled 35 percent during 1969-1978 with a mean annual rate of growth of total production for the industry as a whole of eight percent.

A decree of the CPSU Central Committee and USSR Council of Ministers regarding the improvement of the economic machinery calls for a combination of measures for improving the level of planning work, strengthening the role of cost accounting, key economic factors and incentives, and improving the effectiveness of capital investment.

A great deal of work is being done in the industry in the area of improving the system of economic indicators. It must create, from a cost accounting viewpoint, on the part of enterprises and scientific organizations, interest in the more rapid creation and mastery of the production of high-efficiency equipment, in removing from production obsolete products, and in the development of initiative in the direction required by the national economy. For these purposes, as early as in 1980 for the industry as a whole will be tested a new overall indicator reflecting the portion of savings from using new kinds of products of the highest quality category. For this purpose, in planning and in reporting, the rates of growth of total product output will be determined by scaling the total of the base year by a factor taking into account the effectiveness of new products of the highest quality category as compared with products replaced.

A key economic indicator has become the savings from carrying out scientific and technical measures for raising product quality, improving labor organization and improving management.

An important element in improving the system of planning is the introduction in practice of longterm economic norms. They make it possible, on one hand, to strengthen the centralized management of production, and on the other, to increase the initiative and operating independence of production teams.

The changeover in the industry as of 1980 to the formation of a wage fund based on an economic norm calculated from total unit output, taking quality into account, makes it possible for production associations and enterprises to utilize more intelligently planned wages.

Deserving of special attention is the preparation for the changeover to an accepted-standard method of distributing profit and to cost accounting financing of planned expenditures. The industry will change over to total cost accounting also as of 1980.

The practical accomplishment in the electrical equipment industry of the measures enumerated is, of course, only part of the combination of measures for improving the economic machinery which must be introduced in accordance with the decisions of the party and government.

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BRIEFS

WATER-COOLED HYDROELECTRIC GENERATOR--Created in the USSR and having successfully passed the first production tests is a new maximum-efficiency electrical machine—a 300,000-kW hydroelectric generator with complete water cooling. The State commission has accepted it for industrial use at the Nurek GES. In the conclusion of specialists and scientists, the introduction of these machines at the country's hydroelectric power plants will increase the efficiency of GES's and produce a huge savings. Just the rotating section of the experimental hydroelectric generator--the rotor--is equal in height to a six-story building. And the rotor weighs 1750 tons. This whole bulky and cumbersome object makes around its axis 200 revolutions per minute. Water rotates the hydroelectric generator and cools it too. The chief designer of the new machine, a specialist at the Sverdlovsk Uralelektrotyazhmash Plant, V. Loshkarev, states that it has become lighter and more compact and that the reliability and durability of the hydroelectric unit have been improved. In a single generator, machine builders have saved 10 tons of copper and 100 tons of steel and the consumption of insulation has been reduced. [Text] [Moscow IZVESTIYA in Russian 5 Oct 79 p 2] 8831

PETROPAVLOVSK-OMSK ELECTROTRANSMISSION LINE--The Petropavlovsk-Omsk LEP-220 [220-kV electrotransmission line] has been put in operation. This new line 300 km long has closed the electric ring connecting the Pavlodarenergo and Tselinenergo systems. Industry and agriculture in Northern Kazakhstan have been provided with a reliable supply of energy from the Yermak GRES, the largest in the country's east. Current from this plant has begun to arrive also in Severo-Kazakhstanskaya and Kokchetavskaya oblasts. This year through this new line will also arrive power from the first units of the Ekibastuz GRES-1. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 14 Oct 79 p 1] 8831

VLADIVOSTOK AREA ELECTROTRANSMISSION LINES--The Nadezhdinskaya-Solovey-Klyuch-Krolevtsy high-voltage electrotransmission line will supply with power large plants for the production of poultry and pork, whose construction is being completed not too far from the mining town of Artem. The builders of rural power routes in the seaside area put the new LEP [electrotransmission line] into service on the eve of the holiday of the October Revolution. The construction of rural LEP's is being carried out at an especially rapid pace this year. This is because of the fact that in the vicinity of industrial centers construction is under way on new stockbreeding, poultry and hothouse farms. In agricultural regions since the beginning of the year have gone

into service high-voltage lines with a total length of more than 300 km. Now more than 90 percent of the sovkhozes and kolkhozes of the kray have been connected to the State Power System. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 3 Nov 79 p 1] 8831

LENINGRAD SUBTERRANEAN ELECTRIC BRIDGE--A subterranean electric bridge has been created by specialists of the Lenenergo [Leningrad Regional Administration of Power System Management] Administration. The laying of the first phase of a 220-kV electrotransmission cable line has been completed. The system of wires passes through a steel conduit filled with insulating oil under a pressure of 15 atm. This subterranean electrotransmission line is making it possible to remove overhead lines in the city. Thereby losses of power in its transport are being reduced fourfold. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 1 Sep 79 p 1] 8831

TRANSCAUCASUS POWER BRIDGE--The first ferroconcrete supports have arisen along the Caspian coastline in the Derbent-Khachmas section. A power bridge more than 100 km long will connect the systems of the Northern Caucasus and Transcaucasus. As early as next year current from the Chirkeyskaya GES will flow through the new LEP-330 [330-kV electrotransmission line]. Now power from this hydroelectric power plant, the largest in the Northern Caucasus (its capacity is one million kilowatts), is being supplied along four power routes to Kizilyurt, Groznyy, Makhachkala and Derbent. The added flow of electric power has sped up the growth of new settlements and industrial and agricultural complexes. In addition, the water engineering structures of the GES have become reliable regulators of the discharge of turbulent rivers. This has made it possible to increase irrigation areas and to involve new large areas of land in crop rotation. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 5 Sep 79 p 1] 8831

LEP-220 ELECTROTRANSMISSION LINE--The LEP-220 will extend 670 km. This year installers of the Kolymgesstroy mechanized column must install supports along an extent of 170 km. Great assistance is being rendered to the builders by the airmen of the Chaunskiy Aviation Enterprise. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 26 Oct 79 p 2] 8831

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ENERGY CONSERVATION

MODERNIZATION OF YEREVAN TETS PLANNED TO MEET HEAT SHORTAGE

Yerevan KOMMUNIST in Russian 14 Nov 79 p 2

[Article by M. Fayvush, head of the service for operating thermomechanical equipment of Armglavenergo: "Deficit of Heat Although a Modern TETs Is Near"]

> [Text] "To oblige...leaders of the enterprises and organizations to take measures to implement the strictest pattern of saving fuel and energy resources. To strictly demand from the executors a formal attitude towards the use of fuel and energy resources and possibilities for their increase."
>
> From the decree of the CPSU Central Committee and USSR Council of Ministers "To Provide the National Economy and Population with Fuel, Electricity and Heat in the Fall-Winter Period 1979/1980."

The heat supply for industry and the residential-communal services of the city of Yerevan for many years has been based on individual small boiler houses. But in 1958 a decision was made for Yerevanstroy to build a TETs. However it did not bring especial joy to the municipal workers. The planning assignment provided for heat provision only for the enterprises of the chemical industry with provision of only insignificant surpluses to other facilities. The correction that was further made did not make any important changes in the section on heat supply, but supplemented it with a point on increasing the electrical output of the TETs: two additional energy units were installed of 150 mw each. This was dictated by the acute need for electricity and the attempt to reduce the outflow of water from Lake Sevan.

The past years have changed the conditions--heat and electric power plants have been put into operation in Razdan and Kirovakan, the Borotanskiy cascade of the GES, the first phase of the AES, and its second phase is on the verge of start-up. Despite the complete cessation of run-off of water from Lake Sevan for the needs of power engineering, the republic is now

not only experiencing a shortage of electricity, but is also sending it to the fraternal republics of the Transcaucasus. New questions are on the agenda, and first of all, an improvement in the efficiency of work and environmental protection.

New conditions have made new requirements for the operation of the heat and electric power plants. The Yerevan TETs does not yet completely meet them. The energy units with capacity of 150 mw with circulating-water cooling in cooling towers under conditions of the hot Yerevan climate have the worst technical and economic indices of operation among such aggregates.

At the same time the southern industrial region of the city that is directly adjacent to the TETs is rapidly developing. The residential construction is rising in the Leninskiy and Ordzhonikidzevskiy regions. New areas of Erebuni, Terugol'nik, Shengavit and Nor Aresh are being built up with multi-storied residences.

A difficult situation has arisen: on the one hand the ever increasing need for heat and the possibility of centralizing the heat supply, on the other hand--the completely distributed resources of the TETs and the territorial impossibility of expanding it.

The compiled plan of heat supply for the city recommended construction of large rayon boiler houses. In actuality the construction of central boiler houses and heat networks considerably lagged behind the putting into operation of the heat supply facilities, having created conditions for the growth of small boiler houses whose number exceeded 800.

After examining the situation that had been created the Armglavenergo made a decision to follow the path of modernization of the TETs equipment, increase to the maximum its potentialities for heat output, even by means of a certain reduction in electrical output. The main object of modernization is the condensation steam turbines of the energy units to be switched to a central heating operating pattern.

The planned work showed the promising nature of such a solution: the output of heat is increased and at the same time the operating indices of the energy units are improved. The essence of the modernization--to use the steam heat exhausted in the steam turbine and currently uselessly cooled in the condenser. For this it is sufficient to organize collection of steam from certain intermediate points of the turbine and transfer it to the consumer. At the same time the quantity of steam that is currently uselessly discharged into the condenser is reduced. The possibility was defined of collecting from the turbines of two energy units of steam with pressure 25 abs atm --130 T/h and heat up to 300 Gcal/h.

In interpreting these amounts we note that 130 T/h of steam with pressure 25 abs atm is sufficient to satisfy all the consumers in the southern industrial center. And heat in a quantity of 300 Gcal/h is enough to

completely supply the communal-general needs of the Leninskiy and Ordzhonikidzevskiy regions of the city on the level of 1990. Here due to the combined simultaneous generation of electricity and heat the specific consumption of fuel is decreased by more than 20%.

It is true that the positive factors of modernization are accompanied by a decrease in the mean electrical output from 160 to 136 mw, but for today with such powerful sources of electricity as the Armenian AES and the Razdan GRES this is not important.

The cost of modernization work is estimated at 1 million rubles. This includes installation at the TETs of a new boiler system, laying of pipelines, development of chemical water treatment, and modernization of the turbines.

It will take up to 4 years to compile the plan, order and obtain equipment and assemblies of turbines, and construction and assembly work. Therefore the Armglavenergo plans to fulfill modernization by 1983-1984. This year the Khar'kov branch of the TsKBEnergo [Central Design Office] has made the initial planning analyses, and next year the working planning will start.

However, when spending considerable material resources it is necessary to be sure of their efficient use. We will state directly that currently this is not happening. There is a paradox. Already today the Yerevan TETs can yield heat to the consumer of 160 gigacalories per hour. A request was accumulated for 280 Gcal/h, while actually in the last cold winter only 50 Gcal/h were taken.

The Yerevan TETs has been operating for over 15 years. And during all of these years its heat output has been underutilized. Even in the winter period the steam consumption is 75% of the rated output, and the heat from hot water, up to 40%. The ispolkoms of the rayon soviets and residential-communal organizations were not nudged to efficiency either by the heavy conditions of last winter, or by the special decision of the directive organs.

The powerful heat trunk line built by Armglavenergo from the TETs to the Armenian electrial plant that passes the first and third segments and Shengavit is practically almost not used. Meanwhile in the region of its passage dozens of small boiler houses smoke. The potentialities of the heat route from the TETs to the railroad depot in the Ordzhonikidzevskiy region are also not being used.

It is disturbing that an insignificant number of newly introduced facilities will be connected to the heat trunk line that is under construction from the TETs to the microregion of Erebuni, although the throughput of the line can provide the heat supply even for Nor Aresha and Butani.

The main reason is the extremely slow construction of the heat points, connecting and intra-section heat networks by the industrial enterprises and subdivisions of the Yerevan gorsovet .

The selection of the optimal variant for modernization of the TETs is also complicated by the indefiniteness of the magnitude of heat consumption. Being confirmed in the Yerevan heat supply plan, they were refined twice by the Gosplan of the republic, as well as by the "Armpromproyekt" and "Yerevanproyekt." Here very significant corrections were made.

Apparently the Gosplan of the republic should finally determine the circle of heat consumers from the TETs, the magnitudes of their consumption and plan the necessary interrelated periods for the fulfillment of all work. By the way, the decision of the government of the republic which indicates the need to reduce the number of small boiler houses and increase the specific weight of the TETs in providing heat to the capital is directed towards such an approach.

The absence of fuel on the territory of the republic makes increased requirements for its saving. The elimination of small inefficient boiler houses with simultaneous increase in the heat load and output of the Yerevan TETs are one of the effective paths to fuel conservation.

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PROBLEMS ARISE IN CONTINUED DEVELOPMENT OF OIL, GAS IN FAR NORTH

Progressive Know-How Not Shared

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Nov 79 p 2

[First installment of article by L. Kostylev and V. Noskov: "Did the Bits Become Dull?"]

> [Text] Tyumenskaya Oblast is producing the country's greatest increase in petroleum. Further expansion of petroleum extraction in this harsh region depends primarily on the work of prospectors and on the rate of construction of new wells. However, Siberian drilling workers today are not keeping up with the plan. The reasons for this are the subject of the letters published below.

The name of Vasiliy Ivanovich Volovodov first gained national prominence last year when his drilling brigade was the first brigade of Tyumen' prospecting workers to construct 80,000 meters of producing wells working in four duty tours. This record mark was achieved in less than a year. It was the best result in the entire history of development of the natural wealth of Western Siberia.

The achievement was also valuable because the record was not set at the famous and already well-developed Samotolor field, but at petroleum deposits in the Surgut region. Before this brigade it had been considered difficult to even fulfill the plan there. But foreman V. Volovodov, arriving from Belorussia, completely refuted this established notion by doubling the annual assignment. He surprised the people of the Tyumen' region even more this year by adopting socialist obligations saying that, without an increase in the number of employees, his brigade would drill 100,000 meters of oil wells.

It is easy to imagine that many people were skeptical about this announcement. A newcomer had essentially thrown out a challenge to the famous Tyumen' production leaders. V. Volovodov's brigade seemed to have undertaken the impossible. Its obligations are 2.5 times the annual assignment and eight means the average sectorial norm.

"Why is it impossible?" Vasiliy Ivanovich retorts. "One hundred thousand meters of drilling at deposits in Western Siberia is no flight of fancy. It is an entirely realistic goal which is within the capability of our collective today. In the near future, I think, we will be able to approach 150,000. And we are not demanding anything beyond the ordinary. Our condition is simple: the administration must insure that the brigade has work, that we do not stand idle."

If just half of the brigades of Glavtyumenneftegaz [Main Tyumen' Production Administration for the Extraction of Petroleum and Gas] were to attain the results of this leading collective, the number of producing wells in the Middle Ob' area could be increased by at least one-third without additional expenditures. But at the present time there is a great difference between the achievements of V. Volovodov's brigade and most of the others. Only three drilling brigades out of 107 have matched their level. Moreover, 47 brigades are not meeting their plans and 78 are falling below obligations. For the first time in 15 years the drilling workers of the Tyumen' Administration are not fulfilling their plans; they are about 200 wells behind.

The gap is growing like a snowball. The managers of Glavtyumenneftegaz see the answer to this primarily in a sharp increase in drilling brigades. This position is supported by the Ministry of the Petroleum Industry which has issued a special order obliging drilling workers in the Tatar, Bashkir, Kuybyshev, Saratov, and other regions to help the Tyumen' workers. Without this help the Siberians will not make it this year. But this certainly does not mean that less attention should be given to the practices used by outstanding workers.

It is common knowledge that in the second phase the natural wealth of Western Siberia must be developed by skill, not by numbers. This was true in the past, but now, when the volume of work has doubled, this slogan has fallen from favor among leaders of the main administration and sector. Their plan is to concentrate as many people as possible at the deposits.

What has come of this? The problem of housing in northern cities has become much more critical. Breakdowns in the technological chain have occurred for drilling workers and their associates because of frequent failures to deliver equipment, materials, and tools. The dispersion of men and equipment began having an effect last year: the average output per brigade dropped by more than 2,000 meters and the rate of drilling declined. Losses because of downtime were more than 2,000 days, which is the practical equivalent of losing several brigades for the entire year. These losses have grown even greater this year.

One cannot help asking why, under these conditions, those in charge do not resort to broad support for the initiative of V. Volovodov, who proved in practice that the deposits of Western Siberia must be worked by high-speed methods. At first the managers of the main administration were enthusiastic about the idea. They worked out and approved a schedule of steps to achieve the 100,000 meter goal. Specifically, they planned to prepare the next "cluster" 20 days before completion of work at the previous one in order to have it built before the drillers arrived. They

found a way to direct subsidiary workers to close interaction with drillers. Unfortunately, many points of these carefully worked-out measures have already been forgotten. The order issued by the main administration to "specially monitor" their performance has also remained on paper only.

In the current phase high-speed well construction is one of the basic ways to introduce new petroleum extraction capacities quickly. The struggle for maximum productivity by each brigade becomes especially important with sharply increasing volumes of drilling, a lag in preparatory work, and a critical shortage of people and housing. Hasty formation of new brigades leads to brigades without experience or skill that, in the expression of old-time drilling workers, "spread the well all over the calendar," that is build it very slowly.

Let us introduce the following fact for comparison. The five brigades of the main administration that are using high-speed methods built 410,00 meters of wells last year; this is one-quarter of the total drilling expected this year from all 43 brigades that came to Tyumen' from other regions of the country. That is food for thought!

Unfortunately, the high-speed workers are not highly respected at Glavtyumenneftegaz today. Take V. Volovodov, for example. Not only has his initiative been left practically unsupported, it has even been compromised to some extent. Who ordered this brigade to drill an exploratory well, where high speed cannot be achieved? Vasiliy Ivanovich tried to show that this was a mistake, that the collective would lose at least 4,000 meters of drilling on it. But no matter; he was cut off with the simple phrase, "And how is your brigade better than the others?"

He could not find any answer. We will try to answer for him. The point is that if V. Volovodov's brigade does not reach the 100,000 meter goal this year, drilling workers may develop a kind of psychological barrier. Incidentally, Glavtyumenneftegaz has already "extinguished" more than one "rising star" this way in the past.

After flashing great skills, the brigades of M. Shirokov, V. Glebov, V. Gromov, V. Shava, and others, which were recently making a name for themselves in the Tyumen' region, have withdrawn into the shadows and settled down in the ranks of the average brigades. It is easier for them there, and causes less trouble for the managers of Glavtyumenneftegaz. In fact, only a few brigades out of more than 100 in the Tyumen' region are now striving for high production marks.

"Young foremen have no moral or material incentive to move ahead," G. Levin explains. "Usually things go smoothly in all subdivisions of the brigade for three or four months at the start of the year, and then because of downtime they lose their hope of catching the leaders and shrug it off. I agree that sometimes they lack endurance and purposefulness. But if they are not capable of competing with the best, why not measure themselves against equals? For example, why not single out the best newcomer of the year, the fastest duty shift? Possibly named prizes should be instituted. For example, Glavtyumengeologii [possibly Main

Administration for Geological Exploration in the Tyumen' Region] organized competition for a prize named after Semen Urusov, the discoverer of Tyumen' oil. And we could arrange a competition for young drilling workers for a trophy named after Hero of Socialist Labor Anatoliy Dmitriyevich Shakshin, our best teacher, or Hero of Socialist Labor Maksim Ivanovich Sergeyev, another famous drilling worker."

These suggestions are known at the main administration and oblast committee of the trade union, but they only promise to "take steps," and so far nothing has been done. Even when brigades are working under different conditions the winners in competition are essentially determined "by eye." There has been talk for several years about formulating a special methodology for an "impartial judge," a computer. But again, it has not gone beyond talk. And so painful, messy situations occur where the magic of large numbers draws attention away from the true labor-intensiveness of the achievement.

For example, the brilliant result achieved by A. Denisenko's brigade, which drilled about 7,500 meters at the Severo-Var'yeganskoye deposit in July, has not been given proper publicity. But this is the equivalent, by the most modest estimates, of 11,000-12,000 of drilling at Samotlor, a figure which, incidentally, no one has achieved yet.

Veterans of the Tyumen' North recall that they used to assemble frequently to exchange know-how, but this is no longer done. People do not know who to measure themselves against to get correct guidance in competition. In such a situation correct, operational information is very important. Unfortunately, the drilling workers have none. This is the source of rumors and distorted ideas concerning the reasons for other people's successes. In Surgut we were told that it was easy for Levin to set records because he had six watch shifts. In Nizhnevartovsk they say the opposite, that Volovodov operates two machines at the same time, which is how he more than doubles the plan.

In reality both of these brigades are in roughly equal conditions, and as Comrade L. I. Brezhnev emphasized in his greeting to the collectives of Nizhnevartovsk UBR-1 [Drilling Administration No 1] and Surgut UBR-2, they are achieving truly outstanding results and setting an example of courage, really heroic labor, and great professional skill. But it is also true that the two best foremen have never visited one another and do not know how work is organized in the other's collective.

At the initiative of the Ministry of the Petroleum Industry, a meeting of Western Siberian drilling workers was held this past spring in Nefteyugansk. They discussed steps to improve the work of drillers. Many criticisms of the management of the sector and main administration were presented. The organizers of the meeting considered the two-day exchange of opinion extremely useful and assured those who attended that the questions raised would be resolved quite soon. More than six months have passed. The extraordinary steps that were promised have not been taken. And things have gotten noticeably worse for the Tyumen' drilling workers. Only three of 16 drilling administrations fulfilled their assignments for the first nine months of the year.

Problems with Management Organization, Mistakes

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Nov 79 p2

[Second installment of article by L. Kostylev and V. Noskov: "Tactics and Strategy"]

[Text] The final goal of all participants in the technological process of building wells is to put oil in the pipeline. Therefore, it is essential not only to make the next "hole in the ground" quickly but to carry out the other operations just as fast: remove the drilling rig, lower the casing and cement it, cap the mouth of the well with special fittings, and connect it to an oil collection system. In recent years Glavtyumennestegaz has been able to achieve slight reductions in time required for certain stages, but the total length of all jobs has not been reduced.

In early 1977 the Tyumen' division of the Moscow VNIIOENG [All-Union Scientific Research Institute for the Organization of Management and Economics of the Petroleum and Gas Industry], to eliminate losses at the start and finish of operations, developed a statute on what is called the "brigade relay." The name describes the essential point: each participant must do its part quickly and turn the well over to the next one without delay. What has been the result of more than two years of efforts to raise work efficiency using this innovation?

"We have spent a great deal of effort organizing the relay, but without the necessary results," says V. Romanenko, secretary of the party committee of the Nizhnevartovskneftegaz [Nizhnevartovsk Petroleum and Gas] Association. "We still are not launching wells on time. This is partly the result, of course, of mistakes in the organization of work and supply. But the main thing is that the system of indexes does not direct all participants to work toward the final result of getting the oil moving quickly. Teams are paid depending on acceleration of their own phase, which they sometimes do at the expense of quality work."

Fifteen years ago the just-formed drilling offices in the Middle Ob' region managed the full cycle of well construction. That was a time of complete unanimity which is still remembered today with open regret: all the different teams lived in harmony under one roof.

The sharp increase in the volume of drilling, the appearance of more sophisticated machinery and equipment, and the growing complexity of the production technology required specialization. Drilling workers, derrick installers, road builders, well cappers, and geophysicists organized their own enterprises. They were made subordinate to the newly formed Zapsibburneft' [Western Siberian Petroleum Drilling] Association. Thus a fourth element was introduced in the three-part management system with the ministry, main administration, and administration. Was this justified?

In large part it was. The "golden age" of Tyumen' drilling workers is linked to Zapsibburneft'. That was a time of record speeds and

impressive overfulfillment of assignments. However, we cannot overlook other reasons for the former successes. With rare exceptions they were all recorded at Samotlor. The main administration wisely concentrated personnel and equipment at this deposit and quickly built up extraction and drilling volume. The success was a result of the unusual combination of some of the easiest drilling conditions in the Middle Ob' and a higher degree of construction preparation than in other areas.

Two years ago Zapsibburneft' was eliminated with the formation of four production associations within Glavtyumenneftegaz. These are the associations in Nizhnevartovsk, Surgut, Nefteyugansk, and Uray. What was the purpose of this new reorganization?

Samotlor had reached projected capacity and, while maintaining its role as leader in volume of extraction, shifted the largest part of growth to new deposits. It was necessary to combine the efforts of petroleum workers for comprehensive development of other regions. Being thousands of kilometers from the fields, of course, the main administration could not provide operational management of dozens of subdivisions. It was literally buried in questions of the minute and did not have time for future problems. But more and more future problems were accumulating.

Even during the reorganizations, however, the newly appointed association managers realized that their functions were very limited. In what sense? In the sense that they cannot in fact implement technical and financial policy independently. These things continue to be under the control of Glavtyumenneftegaz. The associations, formed in the image of the main administration, have become little more than stand-ins for it. The only ones to gain to any extent were the lower-ranking production units, who found it easier to solve current problems.

"Of course, the new structure has certain advantages," V. Rayshin, chief of the division of scientific organization of labor and management of production of the Surgutneftegaz [Surgut Petroleum and Gas] Association, agrees. "However, we did not get the effect we expected. All the differences in the report indexes of the different teams nullify all efforts to coordinate the work."

A curious situation came about in the Yuganskneftegaz [Yugansk Petroleum and Gas] Association late last year. The drilling workers were hopelessly behind their plan and the derrick installers were not fulfilling their plan either. All the other participants in well construction, transportation workers, cappers, geophysicists, and the others were "sitting pretty" entering the new year. Perhaps the transportation workers did not deliver some things to the drilling workers, but on the other hand they more than fulfilled the orders of the oil field workers. How about the rest?

We are not in a hurry to blame the planners who were unable to reduce ton-kilometers, rubles, and meters of wells to the common denominator of tons of petroleum. The Ministry of the Petroleum Industry does not, unfortunately, have any planning methodology yet that makes it possible to

orient associated production teams to the final result. Therefore, the services working for drilling workers set their assignments on the basis of past achievements and the capabilities of their enterprises, not the needs of the drilling workers.

Here is how things ended up in Nefteyugansk. It is too bad about your plan, the drilling workers were told, but you must pay for the services. All the services took their "bites of the pie" as assigned, and Gosbank had to put the drilling administration in its card file, that is, they put them on the list of insolvent debtors.

We cannot say that the associations are not trying to make ends meet somehow, to resolve the contradictions. But everything they do is too particular. Here is one example.

Derrick installers are paid depending on reducing the time needed to construct the drilling rig. If they assemble it faster they receive more. As long as the machine operators taking part in the operation were paid on a time scale there was no particular problem. They usually gave the tractor operators extra hours to "keep up relations." But then UTT-4 [Production Transportation Administration No 4] of Surgutneftgezag introduced an indirect piece-rate system for machine operators that was oriented to the final results: building the drilling rig on time or ahead of schedule. The friendship flew to pieces. The new system evaluates the real contribution, not the partly fictitious hours in equipment logs. For this reason the managers of the UTT were not pleased with it either, because they have less room to "maneuver" in the reports.

The existing management structure does not orient drilling workers and associated services adequately to the final result of turning over wells ahead of schedule. The drilling chief of the administration has neither administrative nor financial levers to influence his work partners. All problems with coordination come back to the general directors of the associations. They redistribute forces arbitrarily and use "stop-gap" measures to plug holes. The cumbersome headquarters is increasingly marking time. Who will give the drilling workers the Ariadne's thread to find away out of the confusing labryinth of departmental interests?

The people in Tyumen' have suggested enlarging the drilling administrations, including deep drilling expeditions and subdivisions of derrick installers, transportation workers, cappers, road builders, and construction workers in them. We think this is a questionable proposal; it would produce one more administrative level. This makes the hesitation of the Ministry of the Petroleum Industry understandable. They are in no hurry to give their "okay." To call things by their real names, this is a plan to bring back Zapsibburneft' in a three-part version: in Nizhnevartovsk, Surgut, and Nefteyugansk. The purpose is obvious: to bring the fingers together in a strong fist. But is this the right way?

A consolidated drilling administration is an enlarged copy of the former drilling office. But conditions have changed beyond recognition since then. They say that new things are nothing more than thoroughly forgotten old things. This is true, but the foundation is qualitatively different.

In our opinion, the search for ways to improve the system of management must be conducted in depth, not in breadth. We should look for compatible plan evaluation indexes for associated work teams.

While reorganizing the upper levels of administration the people of Tyumen' are in no hurry to reorganize the lower elements. Many specialists believe that the central and rayon engineering-technical services are now inefficient. When the dispatcher system was conceived it was proposed that these services be "planted" at the deposits. But it was impossible to place them there for lack of buildings, communications, or transportation. Therefore, the rayon engineering-technological services were put in offices. Most of the people assigned to the dispatching offices today are young specialists; experienced foremen who have spent decades in drilling work are less common. But experience cannot be passed on by telephone, and how quickly can you get to the site in a critical situation when it is 100 kilometers away and there are no roads?

"I don't want to hurt the feelings of the employees of central and rayon engineering-technological services. Most of them are conscientious in their work," says S. Ponomarev, a foreman at Surgut UBR-1. "But neither they nor we can see what good it does to have all this hurried-up changing of shifts at the telephone. It is because they are not working on production technology or engineering questions. They have become involved in supply and transportation. They are like 'tolkachi' ["pushers," business executives who arrange deliveries of needed goods]."

This is a serious question that deserves attention. At each one of the 16 drilling administrations some 30 specialists are working as telephone operators. What sense can it make to keep them there when personnel are in short supply? They would probably be more useful as, for example, production engineers in brigades. There is a need for this work. It is not chance that the number of drilling accidents increased sharply with the formation of new collectives at Glavtyumenneftegaz.

Unfortunately, the management structures at Glavtyumenneftegaz take a fairly calm attitude toward such costs, as if to say that straightening out the system of relations among production elements is a job for the scientists, not a concern of the managers. And if we look dispassionately at the activities of the management workers of the main administration, it really is "no concern of theirs." They continue to be buried in ongoing operational problems, forgetting that their main job is strategy.

Special Equipment Still Needed for the North

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 4 Nov 79 p 2

[Final installment of article by L. Kostylev and V. Noskov: "Equipment for the North"]

[Text] Entering the second phase of development of the natural wealth of Western Siberia the workers of Tyumen' experienced a critical shortage

of modern machinery and equipment designed for work under the harsh conditions of the region. Even with all the advances made by machine builders in recent years we must say that they still do not always take the specific conditions of the North into consideration. Most of the equipment received by the workers of Tyumen' continues to be the same as that supplied to petroleum and gas workers in Baku or on the Volga.

Of course, a great deal depends on the principles and persistence of the sector headquarters, the Ministry of the Petroleum Industry. After all, people there know very well that the workers of Tyumen' were the first in the country to make broad use of the progressive technology of clustered drilling of slant wells. This method is used for 96 percent of the shafts built in Western Siberia today. But if it is to be developed further they must have new types of equipment, above all drilling machines.

In the spring of this year the drilling rig 3000-EUK with factory number 10,000 was put into operation at the South Surgut deposit. That is how many drilling machines the Uralmash Plant has produced for petroleum workers of the country in just over 30 years, while constantly improving their products. The anniversary machine is one of the first of a completely new type specially built for cluster drilling in Western Siberia. There are about 40 such units now in use in the Middle Ob' region.

But to be frank, the Tyumen' workers did not receive exactly what was promised four years ago by the Ministry of the Petroleum Industry, the Ministry of Heavy and Transport Machine Building, and the Ministry of Chemical and Petroleum Machine Building. By a joint resolution of these three ministries, NIItyazhmash [Scientific Research Institute of Heavy Machinery] in Sverdlovsk and Uralmash were commissioned to develop a set of drilling equipment, VNIIneftemash [All-Union Scientific Research Institute of Petroleum Machine Building] was to develop a circulation system and heating for the working zone, while Soyuzneftemashremont [State All-Union Trust for the Repair of Drilling Equipment] was to develop a shelter for the pumping and circulation block. Unfortunately, as of today only the Uralmash workers have performed their part of the project. The other participants in development of the new equipment have failed the petroleum workers.

"We are grateful to the scientists and production workers of Uralmash for their creative, involved approach to the job," says M. Safiullin, deputy chief of Glavtyumenneftegaz. "They designed and organized production of completely new equipment, which basically meets the requirements of cluster drilling, and they did it quickly. It is true that not all the criticisms we made during testing were taken care of. But the Sverdlovsk workers gave every one of our requests some attention."

Unfortunately, VNIIneftemash took a different attitude. They just "swept away" many comments by the Tyumen' people, and were in no hurry to take care of ones they supposedly had accepted. Only at the start of this year, much later than scheduled, did the institute finally turn over documentation to the Khadyzhensk Machine Building Plant. When the petroleum workers received the first sets of equipment they sighed;

all the technological concepts were a good 10 years out of date. The final version of the drawings had gone to the plant without going through Glavtyumenneftegaz. It took testing to show the obstinant plant workers that the design needed major revision.

The rate of assembling new drilling rigs is being significantly retarded by the lack of special equipment and shortage of means of transportation to carry cumbersome units. The assignment of designing them was given to the same organization, VNIIneftemash. They designed a truck on caterpillar tracks which cannot be used on concrete roads because it weighs more than 200 tons when loaded. These monsters make the Tyumen' version of Vologda lace crossing the snow-covered swamps and getting stuck in the bogs over and over.

This is still not all. Cranes are needed to use the truck. The experimental model of a special large-capacity hoisting mechanism promised to the Tyumen' workers last year has not arrived yet this year. Therefore, the derrick installers are using two KP-25 truck cranes to assemble the new installation. This is a long and dangerous process. Moreover, this type of 40-ton Yanvarets crane cannot work at temperatures below -25 degrees. This eliminates work on most days between December and February in the North. In addition, the Tyumen' workers are not receiving nearly as many Yanvarets cranes as they need. So it comes out that there is a truck but no cranes, or there are cranes but no trucks.

For two five-year plans now the main administration has talked about building specialized bases to assemble new machinery. Finally, such bases in Nizhnevartovsk and Surgut were included in the construction schedules of the associations this year, but there matters stopped. Even at the semiprimitive bases of the derrick installation administrations they can assemble an installation from its component units in three weeks, while assembly part-by-part at the deposit takes three or four months. Some parts have to be delivered by trucks using winter roads. By the time the last parts arrive the first ones are already buried beneath the snow. The parts that can be found are assembled and what cannot be found is taken from another set. In the last two years 75 3000-EUK sets have been delivered and half of them have been set up.

But now, suppose all difficulties have been overcome. The installation has been delivered and assembled and drilling on the slant well has begun. The important thing now is to hit the assigned access circle, the necessary point of the productive layer. This year the drillers of Glavtyumennefegaz are missing this point in one well out of nine, and the Nizhnevartovskneftegaz Association is doing even worse: one out of six. The high-speed brigades "waste" 8,000-10,000 meters of drilling a year. What is the matter?

The techniques and means of monitoring the trajectory of slant wells have fallen hopelessly behind quality requirements. The instruments manufactured by enterprises of the Ministry of the Petroleum Industry permit intolerably great error. In other words, the drilling workers have a "legal basis" for deviating by a good 100 meters on the horizontal and 20-30 meters on the vertical. How can they help missing if the thickness of the layer is sometimes just half that size?

The parameters of shaft curvature are measured by a special team, and only when drilling has stopped. Geophysicists come to the site, lower the instrument all the way into the well, and then bring it back up to the surface, stopping every few meters. They stop, make a penciled entry, stop, and make another. All the while the brigade is standing idle and the shaft may become more complicated.

What is the answer? A telemetric or autonomous system of continuous monitoring of drilling during the actual drilling process is greatly needed. Each year slowdowns "eat up" hundreds of thousands of meters of drilling. The Tatar ASSR petroleum workers may be used as an example for the Tyumen' workers. In the Tatar ASSR they did not wait for "favors" from the designers, but set up protection of certain instruments in their own shops.

We could continue our list of problems with equipment for the Tyumen' drillers and their associated workers. But the point is not to have a list, it is to see that the concerned ministries, USSR Gosplan, and the USSR State Committee on Science and Technology take the problems of the Siberian petroleum workers seriously. After all, this will have a large part in whether they continue to achieve unprecedented volumes of drilling on producing wells. These are the very wells that must produce the greatest increase in our country's fuel and energy balance.

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FUELS AND RELATED EQUIPMENT

SHORTAGE OF HOUSING AND WORKERS DELAYS KATEK

Moscow SOVETSKAYA ROSSIYA in Russian 1 Nov 79 pp 1-2

[Article by Ye. Komarskikh, and Yu. Popov, special correspondents: "Program 'Katek': Letters on the Establishment of a New Fuel and Energy Base"]

> [Text] The party and government are attributing especial value to the systematic establishment of territorial-production complexes in Siberia and in the Far East. One of them is the Kansk-Achinsk fuel-energy complex. KATEK is the abbreviated name of the complex; it does not have equals in the world practice of energy construction. The initial point and the base of its formation is the Sharypov industrial center created in the southern Krasnoyarsk kray.
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> Here, on the plains bordered by flat hills the Sayano-Shushensk GES, heat and electric power stations are rising of unprecedented power, comparable only with the world's largest, and a multistoried city is spreading. Essentially a qualitatively new stage is beginning in the development of the coal basin, that until recent years has seemingly played the role of the strategic reserve of our economy.

The earth has been ripped open with powerful excavators, and at a comparatively short--tens of 1.5 meters--depth a brown coal bed has been discovered. As yet this is an experimental open pit, and the coal is taken from here for a study of its properties in combustion in furnaces. But at the layer, banks of rock have already been designated from the main open pit, from here tens of thousands of tons of fuel travel daily on a 14-kilometer transport for the 800,000 unit generator of the Berezovskiy GRES-1. Within 4 years, such is the assigned tempo!, the first of them must produce a current.

The Kansk-Achinsk coal basin whose revealed geological supplies comprise 45% of all the domestic, and whose potentials for extraction--1 billion tons per year, stretches 800 kilometers along the Transsiberian railroad line. All the miners of Russia do not yield today even half of this!

These are the outlooks that are opened up, and for the uninitiated man the question involuntarily arises: if this coal lies so close and there is so much of it, why has this wealth not been used in sufficiently broad scales until now? The answer to it is far from unambiguous, the solution to the technical problems of employing the Kansk-Achinsk coal required many years of work of the specialists of different branches of science. And the resources of the national economy of the country were concentrated on other objects. The scales of KATEK required the corresponding resources.

But the hour for turning work to KATEK has broken through. The 25th Party Congress set the task of starting the creation of a unique fuel and energy giant.

Ten plans of GOELRO [State Commission for the Electrification of Russia] in only one region--such is the scale of the planned accomplishments! These are two heat and electric power stations with output of 6.4 million kilowatts each on the base of the Berezovskiy field and another series of power engineering facilities in the nearest Siberian industrial centers that will also be fed by the coal of the Kansk-Achinsk basin. Already at the first stage the famous U. S. Tennessee complex will be surpassed in which 31 power plants of total output of 13 million kilowatts operated on a much greater area.

The 1500-kilometer electric power transmission line with voltage 1150 kv stretches from KATEK and does not have equals in the world. In order to provide for the demand for coal reserves in new technology construction has begun of a giant of domestic machine construction, the Krasnoyarsk plant of heavy excavators that is comparable in its scales with "Uralmash." And what is also important, the southern, Sharypov industrial center of KATEK is being formed with an industrial construction base necessary not only at the first stage, but also for the further development of the entire complex. A city of 250,000 is rising, the social support for the realization of all the plans for this region.

Sharypov, that until recently was a quiet settlement and the center of an especially agricultural region, today acutely feels the dynamism of the change. The rhythm is assigned by the people that are coming and coming here.

These people are faced with doing a lot that is defined by the word "for the first time." How are things going for them today?

Four years ago the power builders hammered in the first pegs in the pioneer microregion on the edge of Sharypov. A large construction project was started with the erection of residences and a pioneer production base. Today five-story houses that cover a square block have already risen here where the typical children's kombinat and a number of three-story dormitories were. And a little farther in the field there is an almost finished concrete plant whose start-up, alas, is being delayed because of an error of the planners. This is everything that has been done since the beginning

of construction. If you compare it with the scales of work remaining for the same period you will be convinced: their scope far from meets the necessary rate.

As often happens in the first time of construction a lot of time has been spent on the solution of especially organizational questions. In the beginning the construction organizations of Kuzbass acted from the main customer and contractor the USSR Ministry of Power and Electrification in Sharypov, later an independent trust "KATEKenergostroy" was set up. Another general customer and contractor, Ministry of the Coal Industry, only 4 months ago created its own construction organization, the kombinat "KATEKyglestroy." Each of them today has its own difficulties, its own cares, and its own demand. But they are working on a common matter and therefore the interdepartmental friction that is developing already at the first stages is perplexing.

According to the plan the power engineers and miners should settle in one city, and the general builder in it is the Ministry of Power and Electrification. However...

"Our ministry gave the power engineers 10 million R for residential construction," states the head of the kombinat "KATEKuglestroy" M. A. Moiseyev. "But as yet we have not received a single meter of residential area from them."

"But what is this "bare" money worth if it is not reinforced with metal structures, reinforced concrete, or other resources?" counters the chief engineer of "KATEKenergostroy" N. M. Maksyutenko. "We ourselves do not have anywhere to settle those who are supposed to build the houses. Even now at the Sharypov site it is proposed that 3,000 people be engaged in work, and we have only 1300. People are being settled in apartments in the old settlement, in the neighboring villages, and still since the beginning of the year only a hundred people have come. Is this really growth?"

Such a situation is usually called a vicious circle: there are no people because there is no place to settle them, and there are no houses because there is no one to build them. Already next year in order to fulfill the planned volumes of work the power engineers need another thousand people, in 1983 by the moment of start-up of the first power block--20,000. The team of coal miners must rise in roughly the same way. And all need a well-organized residential area, for whose construction there is no one to take...

The problem of personnel, both engineering and technical workers, and skilled workers, here is really the maximum acute. In the trust "KATEKuglestroy" there still are none of the many leading specialists and leaders of sections. There are not enough leaders in the middle link, foremen and men in charge. Therefore even those potentialities that there are present are being poorly utilized.

We were convinced of this for ourselves after visiting those facilities that have been started. On the site of the main construction base a boiler house is now being built that already this winter must provide heat for the other built objects. The work here was started on a contractor basis, but now the team has actually broken up.

"What kind of cost accounting can there be," speaks the brigade foreman of the carpenters-concrete workers N. V. Kachayev, "if the lumber does not arrive on time, fittings are supplied not for those sections, and the documents are made such that different dimensions are given for the same part! Only four people remain from the complete group of the team that came from Nazarov. The remaining ten, are novices they still have to be trained how to knock together centerings with an ax..."

Of course it would be ideal if at a construction site of such scope as KATEK skilled brigades came from other sites where they are cut back as the business is finished; even if they came not as whole teams but if they included people capable of teaching and joining the novices and becoming the core of an efficient group. This occurred at the construction of the boreholes in Priob'ye, this is practiced in the laying of oil and gas trunk lines, and at certain other construction sites.

When it is not clear where to settle individual arriving workers of course it is very complicated to solve this problem with whole brigades. Nevertheless, the organs who are responsible in the ministries for supplying personnel to the construction site should focus on such a form of creating collectives and secure the constancy of the brigades. It is too expensive for the national economy to have that period of oscillation that is characteristic for many objects when the collectives are gathered haphazardly. And at KATEK for the construction teams it is very promising for the program has been computed for tens of years ahead!

So far about 500 requests have come to KATEK from workers of the most diverse specialities who want to work on the construction of GRES-1 who are ready to come as soon as...they are given housing. Next year the komsomol central committee intends to send 10,000 of its messengers to the all-union shock construction site, they only need to be settled and greeted. And here they will do without any temporary barracks and small stoves. The local party and soviet organs are firmly holding to this course. Nothing temporary, such is the motto and task of the unique construction site. And fidelity to this principle will be observed only with the active support and interaction of the builders who are the main for today at KATEK, the Ministry of Power and Electrification and the Ministry of the Coal Industry.

Today the parts of houses for the KATEK construction site are supplied from a dozen cities, at times miles and miles away, from Nazarov, Tom'-Ysa, Krasnoyarsk, Achinsk, Kansk and Bratsk. Unfortunately, often they do not transport what is in the plan and what is stipulated by the architects. Often they operate entirely on the principle: "I will give you what I

don't need." Evidently such a situation should be decisively altered. The Ministry of Power and Electrification should mobilize to the maximum the resources of the house building enterprises under its jurisdiction that have been entrusted with providing for the first stages of KATEK, and call to discipline those of them that are violating the delivery schedules. The main thing is accelerated development of the house building intended for KATEK. This alone will become that key that will open the door to the city of the future, and to the construction sites of the main objects, the GRES and open-pit.

But what did we hear after returning to Moscow from the deputy minister of power and electrification of the USSR V. A. Kozhevnikov:

"What acceleration can you talk about if for next year the USSR Gosplan plans to allocate to us for all the objects of KATEK even fewer resources than this year, 8 million R? And only a fourth of the sum for residential construction. And here allocate, where to force in the first place. In Sharypov itself one can expect the start-up of the house-building kombinat only in 3-4 years, and in Nazarov where we also have a base, no sooner than in a couple of years. The computation for new facilities of house-construction at our Tom'-Usinsk plant in Kuzbass-- there start-up work is already unfolding..."

Yes the words of the important leader who is treating the important construction site do not fill us with optimism. The more so since in this same Tom'-Usinsk the situation is far from that which is presented in the ministry, although at the main site of KATEK they are ready to send there the so scarce groups of builders. While in the KATEK headquarters that is operating in the Krasnoyarsk territory party committee they believe that it would be more correct to mobilize forces for the construction of the plants of house construction in Nazarov located nearest of all to the main site.

This is how the task has been set for guaranteeing even today a great turn in work on the site, but there is no unified opinion and no strictly substantiated concept from which end to start on it. Although such a concept was required immediately, as soon as the creation of KATEK was started. But not a single department took such an initiative on itself. The Gosplan workers approach the matter with one ruler, the ministry, with another, starting already from their own scales, and at the site the conviction is correctly advanced: "Nothing can be done at the GRES site until there are houses and social and cultural facilities."

For besides the main production objects, the coal open-pit and the GRES, it remains to begin construction of the repair plants, set-forming bases, assembly areas, tens of kilometers of engineering lines, superpower transmission lines and substations, automobile roads and station railroads whose laying, by the way, neither the RSFSR Ministry of Automobile Roads nor the Ministry of Transportation Construction is hurrying with.

An unlawfully large number of discrepancies have been created at the initial stage of construction. Today at the site there are general customers and general contractors, but there is no general planner. And skilled supervision of the correct implementation of the planning solutions and operational interference in necessary cases are extremely needed. The errors and omissions are too expensive.

We have already mentioned the case of the boiler house. And here is another. The people of Krasnoyarsk suggested to their colleagues of the Leningrad branch of the institute "Orgenergostroy" that the latest, rapidly readjustable equipment be used in the planned house-building kombinat, but it happened that they had not yet heard about it, moreover on the path of using the innovation there were so many departmental obstacles that the suggestion remained undecided.

KATEK in all respects today has been inserted in a number of the most important creative programs. This means that everything in the plans must meet the last word in science and technology. That is why it is justified if the USSR Gosstroy has taken under its special custody the establishment of the new fuel and energy base.

At the same time in the interaction of the departments that are responsible for the construction site the same pattern is observed of separateness in the setting up of territorial-production complexes and large industrial centers which was discussed at the "round table" held by the editorial staff of SOVETSKAYA ROSSIYA in Krasnoyarsk during the last year's "Siberian Route" and in other materials of the newspaper ("From the Position of the Department"--11 April, "Program: Siberia"--9 August, "To Different Sides"--4 September of this year). With such a situation the difficulties that arise in the pioneer period will have an even more serious effect when it will be necessary to solve not only the residential problem, but also the broadest circle of other problems, economic, technical, social, which will require a new system of control over the formation of such complexes. The next correspondence will discuss control.

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KARAGANDA COAL: LOST IN TRANSIT

Moscow LITERATURNAYA GAZETA in Russian No 42, 17 Oct 79 p 10

[Interview with N. A. Drizhd, production director, Karagandaugol' Association, by LITERATURNAYA GAZETA correspondent A. Samoylenko (Alma-Ata): "One Million Tons Gone With the Wind. . . The Amount of Karaganda Coal--A Whole Mine's Yearly Output--Lost Annually in Transit"]

[Text] One million tons, gone with the wind... This figure can hardly fail to disturb everyone. From our school days we know that our country's natural resources are enormous, that our mineral resources include practically the entire Mendeleev Table. . . Yes, our country's national wealth reliably protects us against the energy crisis that today threatens the whole world. But this does not mean that we can be careless with our riches.

Today we are obliged to think not only about ourselves and our children but also the children of our children. We must be thrifty with each lumb of anthracite, each ton of petroleum. Not one particle of this wealth must be frittered away or wasted.

This is the way the party sees it. ". . . One of the key tasks," writes Comrade L. I. Brezhnev in his work "Virgin Lands," "is to make thrifty and rational use of everything we have that is produced in this country. Waste cannot be allowed, and the larger the scale of the economy the more damaging any wasteful approach is."

With today's interview with the production director of Karagandaugol' N. A. Drizhd, this newspaper begins a discussion concerning the thrifty use of energy and fuel resources, the thrifty use of the labor of those who bring us light and heat. . .

[Question] Nikolay Aleksandrovich, we are well aware today of the value of natural resources such as coal. We also know that the miner's labor, despite the present level of mechanization, continues to be very difficult and sometimes dangerous. . . This is all the more reason for all of us to be more thrifty with coal and make the most rational and economical use of it. In this regard, I should like to know how things stand with Karaganda coal.

[Answer] Well, let's see. . . Today everyone is aware that we must be thrifty with our natural resources. But awareness alone is not enough; it is essential that the often wasted coal, oil, and ore become the personal concern of people, especially those who are working or are involved in the sphere of the extraction and utilization of natural energy resources. Yet we still ignore obvious facts lying on the surface. When we say "nature" or "natural resources" we immediately add "conservation," "reproduction." Alas, the worked mineral deposit disappears forever. . . Man has only one choice--to make rational, "pure" use of the gifts of nature and, in using them, keep in mind that a single kilogram of coal that is frittered away can never be retrieved. I repeat, this concern for irretrievable loss must be instilled in people. . .

Now about the miners' work. People are well aware that the work is difficult. They have read about it and seen it in the movies. . . But this awareness, to put it mildly, is a simplified one. Most often people see this labor, so to speak, as in a parade--record production, high-speed drilling, flowers on completion of a record shift. But a mine means work at a depth of 700 meters, where every step, every tunneling movement "adjusts" the enormous soil pressure, ground water, explosive methane, escaping gases, rock bursts. . . And it is in such conditions that the miners strive to get everything out of the deposit, to strip it clean. This is a difficult matter. It is sufficient to note that scientists and mining specialists are constantly involved in striving to improve the effectiveness of mineral extraction. The state is spending millions of rubles on this. And today we are taking coal that only yesterday was considered inaccessible. That which is most offensive to the miners begins when this coal, mined with such difficulty, is brought to the surface and loaded on cars. . .

[Question] Do you mean to say that part of the coal is lost in transit to the consumer?

[Answer] I mean to say that losses of coal in the production links "shipper to consumer" compel us to speak of an irresponsible attitude to the difficult labor of the miners. . .

Let us start with the shipping. We could spend a lot of time reproaching the rail freight service, we could talk about how from year to year the freight trains "sow" thousands of tons of valuable Karaganda coal

into the atmosphere and along the roadbeds. Instead, let us discuss just one fact. . . In 1965 we asked the scientists to study the problem of protecting Karaganda coal during rail shipment. The research was carried out, and the result was a huge work which unemotionally, in the language of figures and photographs, depicted the railroad fate of our coal. Allow me to read to you a few lines from this work. . .

"To get a real idea of the amount of annual estimated losses of coal in transit by rail let us note that an operation such as Mine No 121 of Saran'ugol' has to operate the year round to make up for these losses."

As you see, the work of an entire mine in our coal basin goes for nothing through the fault of the railroad. And there are 26 mines in our basin.

[Question] Could you tell us about the capacity of the mine mentioned in the quote of the research of the Novosibirsk Scientific-Research Institute of Rail Transport. . .

[Answer] Now this mine is known as the Aktasskaya. Its average capacity is 1 million tons per year. Now you can see why I chose to cite this instance, not the only one. I am a practical man. And I believe that figures like this are more convincing than any emotional arguments about how we often treat our natural energy resources. I don't know about the railroaders, but we miners look at these losses in terms of more than just their material value. It is not difficult to compute the wasted rubles along the rail lines: With the present development of computers these operations take just a few seconds. But who can compute the moral costs, and on what computer? It is not difficult to imagine the moral suffering of a man who knows for a fact that the results of his labor will be frittered away. I should think that it would rest just as heavy on the hearts of the railroaders as well. In any case, if I were a railroader I would not be very inspired by fulfilling the rail shipment plan if I knew about the damage inflicted on the shipper, as the transport workers call us. But, evidently, for the workers on the railroad this kind of assessment of coal losses is useless lyricism. But we of the Karagandaugol' Association pay up to one-half million rubles for these losses every year. . .

[Question] You pay for your own coal lost by the railroad?! Do I understand you correctly?

[Answer] Yes, for coal lost by the railroads in transit to the consumer it is we who pay. In the research findings you saw photographs of rail cars arriving at their destination and very likely you noticed how the coal was wind-blown and leaking through holes in the cars. For some reason, this wind-blown and leaking coal is called "underload," and for that we have to pay! And every year we pay one-half million rubles. . .

[Question] But the situation is absurd!

[Answer] It is not a situation; it is practice which has developed over many years! The fact is that the railroad, at least in recent years, bears no responsibility--neither moral nor material--for the safeguarding of coal in transit. And since someone has to be responsible--not in words but in rubles--this "honor" falls to us.

[Question] But shouldn't there be some motivation for this obligation?

[Answer] There is. I will explain. You see, according to present regulations governing shipments the responsible party for safeguarding the coal is the shipper, that is, we. And it would be all right if this practice continued if only someone would guarantee us the quality of cars and shipments. But no one gives us such guarantees, the railroad itself refuses.

"Don't accept the cars if they are bad. First you accept them and then you complain," the railroaders tell us. Of course we can refuse cars and testify that they are in unsatisfactory condition. In that case we wouldn't have to be responsible for the coal for the simple reason that it wouldn't be shipped. Take it or leave it, the railroaders tell us and promptly turn over their cars to more compliant shippers, and then we have to shell out to our customers for failure to deliver on time. . .

You see how it works? Now you understand that the railroad is unashamedly taking advantage of the acute shortage of rail cars (how's that for a moral stance, how's that for unfair treatment of your partner?), and for this reason we have been in an impossible situation for many years. If we ship coal in leaking cars we pay because, having accepted the cars, we also accepted responsibility for safeguarding the coal. If we are firm and refuse to ship, we still pay: For failure to deliver on time. Of course it would be much less convenient to refuse bad cars and then, through arbitration, argue that we are in the right. And we can prove it (incidentally, our association's loading-transport administration concerns itself with just such litigation), but it takes months to get justice. Yet the coal is needed now, immediately--25,000 customers in all parts of the country are waiting for it. And is a metallurgy combine going to be consoled by learning in the fall that the railroad was to blame for the fact that the coal it urgently needed did not arrive in the spring? This is why, knowing how badly our industry needs the energy, and hoping that most of the coal will get there, we end up consigning the coal to its long-suffering rail odyssey.

[Question] Nikolay Aleksandrovich, let's just suppose that the railroad did ideal work--delivering the cars on time and, especially, coal cars in good condition. In this case could we hope that losses would be eliminated?

[Answer] Let's see what we mean by "losses" . . . If you mean literal losses--blown away, leaked through holes--then it is possible that the fatal "underloads" would not occur. But if we mean by losses the irrational use of energy resources (and, obviously, this would be more correct), then even in these "ideal" circumstances we would not be insured against losses. Here's what this means in practice. On 29 August of this year in the Urals area by order of the USSR Minister of Railways not two, not four, but eight (!) special trains carrying Karaganda coal were held up, and again, thanks to the transport workers, we were placed in a position of innocent guilty parties. . .

[Question] But weren't there substantial reasons for this?

[Answer] I assure you that halting eight special trains is not an extraordinary incident but the result of the usual, routine failure to meet train traffic schedules. Doesn't it constitute a loss when hundreds of thousands of tons of valuable energy fuel get caught in railroad traffic jams instead of going to be put to work? Of course these losses are, so to speak, mediated [oposredovannyy] in character, but the state still has to pay for them with real rubles.

[Question] Well, Nikolay Aleksandrovich, let us hope that the railroaders will pay attention to the facts you have stated concerning transport losses of Karaganda coal and express their own concrete, businesslike remarks on these facts. But how about the final link--the consumer?

[Answer] The absence of control over safeguarding of the coal during shipment opens up unusual possibilities for greedy initiative, for all kinds of "private enterprise." Go into any loading-transport administration and you will find a file of letters from citizens who report cases of pilferage of coal being carried on the railroad. It must be admitted that there are many such cases. Taking advantage of the negligent attitude toward coal, dishonest people meet the special trains at stopping points carrying buckets and sometimes with their own dump trucks. . .

But, alas, that's not all. The absence of control corrupts others besides "private entrepreneurs." There was one time when the Cherepetskaya GRES lodged a claim against Karagandaugol' for an "underload" in the amount of almost one-half million rubles. Naturally, we were put on our guard by the figure, which is enormous compared with the volume of coal deliveries to such a "small caliber" customer. The association's people immediately went out there and made a thorough investigation. What do you think they found? The administration of the Cherepetskaya GRES, not to mince words, had hidden away more than 30,000 tons of coal and written it off under railroad losses. The "lost" coal was found. And the power plant admitted that a "misunderstanding" had occurred. Knowing, however, that there had been an

attempt to use the coal for other than its intended purpose, we lodged a complaint with the prosecutor's office.

For some reason we are complacent about the unusual abundance of our natural energy resources, we have got the erroneous idea that they are inexhaustible. Of course we possess vast energy resources, but it is essential that our sufficiency stem not only from our natural resources but also from our thriftiness. To conserve and, as a result, replenish our country's wealth is the economic and especially the moral purpose of our life!

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WIND POWER DEVICES IMPLEMENTED IN RURAL AREAS

Kishinev SOVETSKAYA MOLDAVIA in Russian 11 Oct 79 p 4

[Article by: A. Kabashnyy, Head of the Main Administration of Mechanization, Electrification, and Introduction of New Equipment, Ministry of Agriculture, Moldavian SSR; V. Koditsa, Head of the Department of Electrification and Distribution Networks, Main Power Supply Administration of Moldavia; and I. Moskalyuk, Docent, Kishinev Polytechnic Institute imeni S. Lazo]

[Text] The sun, wind, and sea tides are the so-called renewable sources of energy. And however paradoxical it may seem, during the age of atomic power, man is beginning to show increasing interest in these sources.

The following two factors are responsible for this interest: the necessity of searching for the cheapest sources and the possibility of obtaining energy without polluting the environment.

Both of these circumstances are particularly important under the conditions of our republic. Firstly, there are no active deposits of fuel within Moldavia. Secondly, with the existing population density, the problem of environmental protection is particularly important for the republic.

Let us talk about the wind power. In principle, this problem is not new. Wind power devices were used widely in the economy of Moldavia during postwar years.

As electrification developed, such devices started being used less and less. Taking advantage of preferential rates for electric energy, administrators of kolkhozes and sovkhozes gradually started forgetting the advantages of wind-driven motors which, we believe, is absolutely wrong. Special characteristics of agricultural production (scattered power consumers, their seasonal work, and territorial scatteredness) make it impossible to have high indices in centralized power supply. This is supported by the following facts: agriculture diverts most of the electric power transmission lines and the overwhelming majority of transformer substations. Therefore, the cost of one kilowatt-hour of electric power delivered to an agricultural consumer is much higher than the price at which the government provides it.

In the meantime, power supply for many agricultural facilities can be ensured by a wide use of wind-driven power units. For example, the standardized wind-driven power unit AVEU 2-6 which has been operating since 1973 in Chimishliyskiy Rayon ensures stable mechanization of water supply at their sheep farms. Another wind-driven power unit has been tested successfully at the pig farm of the Rayon Association "Kolkhozzhivprom" in the village of Gura-Kamenchiy, Floreshtskiy Rayon.

Tests of the "Tsiklon"-type wind-driven power units conducted at the Kishinev Polytechnic Institute and at farms indicate great possibilities of a wide use of wind energy, which would make it possible to increase considerably the energy resources in agriculture.

Today we have designs of various wind-driven electric power stations. In the near future, "Vetroenergomash [Wind-Driven Power Machines]" Plant will start producing more powerful wind-driven units (8, 16, and 30 kilowatts).

Wide introduction of wind-driven power units is promising and will produce a great economic effect for farms.

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ELECTRIC POWER AND POWER EQUIPMENT

SOLAR ENERGY GENERATOR DEVELOPED

Kishinev SOVETSKAYA MOLDAVIA in Russian 10 Oct 79 p 4

[Article by ATEM Telegraph Agency correspondent]

[Text] The needle of a digital voltmeter in the laboratory of semiconductor physics of the University of Kishinev came to life and indicated that the members of the laboratory succeeded in finding new effective materials for the components of converters of solar energy into electric energy. A miniature station yielded an electric current which registered for the first time a ten-percent efficiency of the generator developed here.

Solar power engineering is of great significance to the national economy. Solar batteries do not pollute the environment. They are compact and can be used anywhere where it is impossible to build electric power transmission lines. Such converters can provide electric power for animal breeding farms and residences. They are used for pumps to pump underground water. This was explained by A. V. Simashkevich, Candidate of Engineering Sciences, who is the head of this project. New prospects for the development of solar power engineering were opened by the creation of semiconductor heterojunctions -- contacts of two heterogeneous materials. However, the crystals and films which were used to grow them are still scarce and expensive.

Moldavian scientists started searching for less expensive and more widespread compounds of zinc and cadmium. The solution of this problem was complicated by the stubbornness of kindred materials in forming similar crystal lattices under their mutual influence. But it was the purity of their "boundary zone" that had to ensure the light sensitivity and energy characteristics of the battery. A special process developed in the vuz brought about the initial successes. Absorbing a considerable part of the radiant energy of the solar spectrum, the new photocell can now produce a current whose intensity reaches 10-15 milliamperes per each square centimeter of the area with a voltage of one volt.

Scientists of the University of Kishinev in collaboration with their Leningrad colleagues and specialists of the Ministry of the Electrical Equipment Industry are using this generator as a basis for developing new solar batteries. They can be used as a power source for electronic watches and circuits, transistorized receivers, and other complicated devices.

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ELECTRIC POWER AND POWER EQUIPMENT

NEW POWER UNIT FOR KOSTROMSKAYA GRES UNDER CONSTRUCTION

Moscow TRUD in Russian 21 Nov 79 p 2

[Article by N. Markov, chairman of the coordination council of the "Work Relay Race" and the general director of the Scientific and Production Association for the Study and Design of Power Equipment imeni I.I. Polzunov]

[Excerpts] There have never been structures similar to the 1.2 million kilowatt power unit of Kostromskaya GRES either in our country or abroad. It is being built by the resolution of the 25th CPSU Congress in accordance with the state plan for economic and social development for the Tenth Five-Year Plan.

This power unit is unique. Almost all of its equipment represents a new quality stage in area of power and electrical machine building. The turbine, generator, and some auxiliary equipment will be a basis for creating new series of power units, primarily for electric power stations of one million and one million 200 kilowatts planned for production during the Eleventh and Twelfth Five-Year Plans.

The problem of creating the equipment for this power unit required a large volume of research and experiments.

The agreement on creative cooperation and socialist pledges for the creation of a 1.2 million kilowatt power unit for Kostromskaya GRES was signed by 42 enterprises and organizations of the power-machine-building and electrical equipment industries. Thirty-two of them are located in Leningrad and Leningradskaya Oblast. When the composition of the "Work Relay Race" took shape, new deadlines for the delivery of equipment and the completion of units became known, and new plans were made on the basis of the socialist pledges.

A coordination council was formed. It included directors, secretaries of party committees and chairmen of trade-union committees of production and scientific-production associations, plants, design and scientific research institutes, representatives of party and trade-union organizations of the Leningradskaya and Kostromskaya oblasts, and trade-union central committees.

The Leningradskaya and Kostromskaya Oblast Committees of the CPSU aided greatly in the work of our coordination council. They were responsible for the coordination of the activities of all participants of the "Work Relay Race".

What did our council do during the two years? In cooperation with the general designers from Gor'kiy, we developed a schedule for the construction of the unit. The enterprises manufacturing the main equipment also developed their schedules which reflected the progress of designing and manufacturing of the equipment. The mutual complaints of the customer, the general designer, and the suppliers of equipment were examined.

The workers of the Leningrad Association "Elektrosila" manufactured the world's largest turbogenerator TVV-1200 ahead of schedule. The association "Leningrad Metallurgical Plant" created the world's largest close-coupled steam turbine K-1200-240-3. It was created with the participation of the association "Izhorskiy Plant", "Kharkov Turbine Plant" and our association. The Taganrog association "Krasnyy kotel'shchik" manufactured a Europe's largest single-shell boiler. The decisions of the coordination council and the deadlines set by it for the fulfillment of individual jobs and creation of equipment were reflected in the orders of the ministers which determined mutual aid by the plants of the industries.

The authority of the coordination council was increasing as the effectiveness of its work grew, particularly, if the participants of the agreement were convinced in the effectiveness of the help given to them. However, serious problems were also arising in the process of the creation of the equipment.

Even at the first meeting of the council, considerable difficulties were revealed in the creation of the boiler at the "Krasnyy kotel'shchik" due to a wrong planning by the USSR Gosplan of the stages of the manufacturing of the boiler and the financing and material supply connected with it. Our council helped efficiently the Taganrog workers by appealing to the USSR Gosplan and other departments. As a result of this, the gigantic boiler was manufactured and installed on time at the Kostromskaya GRES. When the pipelines of the power unit were designed, it was necessary to calculate urgently their strength. At the request of the coordination council, this was done above planned tasks by a group of one of the laboratories of our association. The results of this work were included in the design of the pipelines and contributed to the obtaining of economic effect in the amount of 3.7 million rubles.

The experience in the organization of a competition on the "Work Relay Race" principle and the creation of coordination councils for directing them indicate that a successful organizational form of the struggle for the final national economic result was found. The Kostromskaya GRES gigantic power unit will be started next year. At the present time, we are working on its quick introduction into industrial operation and bringing it to the design indices.

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LAST GENERATOR STARTED UP AT NUREKSKAYA GES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Oct 79 p 3

[Article by V. Loshkarev, chief designer of the Hydrogenerators Department of the Production Association "Uralelektrotyazhmash," Sverdlovsk]

[Excerpts] A few days ago the last power unit was started up at the Nurekskaya GES.

Each new generator delivered to Nurek was better than the one before. They are based on thirteen latest solutions and inventions a number of which are patented abroad. They have no match with respect to some of their indexes. The machines have displayed a high degree of reliability in operation. A special place among our machines is given to the ninth unit. It represents a new stage in the development of the building of hydrogenerators. Such equipment makes it possible to utilize fully the enormous potentialities of our rivers for the production of inexpensive electric energy. This equipment will be used at the Roguskaya GES. The water cooling system of the rotor of the high-speed machine and other solutions make it possible to obtain a national economic effect equal to one million two hundred thousand rubles with each 600 megawatt hydrogenerator. The machines will be more reliable, will have a high efficiency factor, and will require considerably less metal for their manufacturing. Just one such machine saves six tons of copper.

The significance of the "work relay race" which originated during the construction of the Nurekskaya GES was discussed extensively in the press. It helped to put power capacities into operation ahead of schedule. But, unfortunately, little has been said about the feedback of this race which is just as significant in the creation of more perfect equipment.

The workers of "Uralelektrotyazhmash" believe, not without reason, that the "work relay race" was responsible for the truly creative situation in the relations between the customer and the manufacturer, which had a positive effect on the creation of high-class equipment. The psychological aspect which forms the relations among the partners plays a great role in solving any problems. Since the beginning of the construction project, an

atmosphere of complete confidence and mutual help was established among the designers and technologists of "Uralelektrotyazhmash", operating personnel of the GES, and the installation workers, which ensured strict fulfillment of mutual duties.

After two years of operation of the first units, specialists of the GES and installation workers prepared a list of proposals and comments for the designers. This document was discussed at a joint meeting of specialists of the supplier, installation workers, and operating personnel. The party committee of "Uralelektrotyazhmash" took the fulfillment of proposals and comments under its control. Further joint work on the improvement of the designs yielded many valuable solutions. Therefore, the installation workers and operating personnel can be considered as co-authors of a number of useful innovations.

For example, on the basis of their proposals, the authors of the project reworked the designs of the ventilation system and the end packs of the core of the rotor. This made it possible to reduce the heating of the end zone and expanded the load range of the generator. Changes in the seals of the oil baths improved the operating conditions considerably. Thus, each next machine was becoming more reliable and more convenient for installation and repairs.

Individual heavy machine building has its own peculiarities. Each machine is a single-design machine, therefore, it is impossible to test it on experimental specimens. But the machinesare used for many dozens of years. It means that their designs must be based on the best long-range solutions. However, customers do not always take the risk of ordering units which were not tested in practical use. This sometimes postpones the use of promising but untested solutions for a long time.

The trust of the operating personnel in us played a decisive role in the development of a water cooling system for the rotor. The GES personnel took a chance and agreed on the water cooling system for the rotor of the ninth unit. Chief engineer of the electric power station, A. Mel'nikov, not only gave his consent to the experiment, but actively helped in solving the problem of the purification of cooling water connected with this. Through joint efforts, the work was completed successfully.

Mutual trust of the participants of the work relay race kept strengthening. I recall an incident which occurred during the period when the second unit was just about to be started up. Through our fault, the core pins of the stator were made from the wrong material. Troubles started when the hydrogenerator was tested. On the same day specialists of our department flew to the site. During the night, new pins were made at the plant and were in Nurek the next day. Efficiency displayed in the correction of the error made it possible to start the unit on time. We are not ensured against errors, but mutual trust and support which are so necessary in creating new equipment depend greatly on the attitude toward errors and on how they are corrected.

The feedback of the "work relay race" had a favorable effect on the improvement of the standards of production of hydrogenerators at our enterprise. The pledges made in connection with the race and confidence shown to us made us introduce major improvements in our production procedures. For example, specialized sections were created and properly equipped at the plant.

This cooperation of the client, installation workers, and manufacturers created an atmosphere of true comradeship in the fulfillment of the common task. Nurek people visit our plant frequently. Members of the brigade of our vertical lathe operators headed by V. Brezgunov maintain friendly relations and meet with the members of M. Demko's brigade of installation workers from Nurek. Constant business and friendly relations are maintained by "Uralelektrotyazhmash" personnel with the head of the electrical shop of the GES, A. Polynskiy, foreman Yu. Khanabiyev, installation section head V. Migurenko, and others. It is no coincidence that many of our people became "honorary Nurek workers", and many Nurek people became "honorary 'Uralelektrotyazhmash" workers."

The points on which we agreed with the Nurek people were included in the pledges of the personnel and were placed under the control of the party committees of both enterprises. There was a truly national approach in the solving of all problems. It is no coincidence that people say at our enterprise that, if we had such relations with other electric power stations, the present technical level would have been achieved sooner.

As a result of the work relay race, the Nurekskaya GES became our pivotal point and a proving ground for testing the latest promising solutions to ensure progress in the development of equipment. Such testing sites with highly skilled operating personnel are necessary for individual heavy machine building enterprises. They can compensate to a considerable degree for the absence of the advantage which series machine building enterprises have.

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ELECTRIC POWER AND POWER EQUIPMENT

MOSCOW'S YUZHNAYA TETS NEARING COMPLETION

Moscow MOSKOVSKAYA PRAVDA in Russian 3 Nov 79 p 3

[Text] 29 October, Monday. The installation of the structures of a large hot-water boiler has been completed at the Yuzhnaya TETs which is under construction. The high-capacity heat and electric power plant is being prepared for start-up and adjustment work.

This giant of Moscow's power engineering is about to be born. It is planned to start its first power unit in the beginning of the next five-year plan. TETs do not only produce electricity but also heat. Therefore, high-capacity hot-water boilers are being put into operation first at the new complex. Two such units are already supplying heat to residential areas of Yasenevo.

Another unit with a capacity of 180 gigacalories per hour is now being prepared for operation. Specialists of the "Mosenergostroy" Trust have completed the assembly of the main units and structures and are preparing to connect the hydraulic devices. An electric circuit is being created for controlling the boiler.

Valentin Petrovich Smal'ko, head of the capital construction department of the Yuzhnaya TETs, said that all participants of the construction of the new hot water unit understand the importance of the job: this boiler is extremely necessary for uninterrupted effective heat supply to the growing sections of the southern part of the capital as early as this winter. To all appearances, it will start operating before the end of November. At the same time, work is being done on assembling the metal trunk of a 150-meter pipe which is necessary for the operation of all six hot-water boilers included in the first-priority section of our TETs.

It is somewhat strange to use an everyday household work in reference to a unique engineering complex occupying one-half of a huge building. However, such is the tradition, and, just as before, modern heating plants are called boilers. But the name is not of the essence. The creation of each unit of this kind is the most complicated engineering problem. But the skilled

workers of "Mosenergostroy" know how to solve them. And now, simultaneously with the third boiler they are working on the fourth one which is also planned to be put into operation this winter by the most difficult and cold period which is justly referred to as "peak" period. The output of this boiler will not be any less than that of the third one.

The work at the Yuzhnaya TETs is in full swing. The new electric power complex is increasing its capacity. The preholiday vigorous implementation of labor pledges of the builders was successful. This means that the heat produced by the new boilers of the TETs will soon start flowing through underground pipes to the apartments of the Muscovites.

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BRIEFS

GEOTHERMAL POWER PLANT PLANNED--A geothermal power plant, to be built near Stavropol in the North Caucasus, will begin producing electric current by the mid-1980's. It will be the first geothermal power plant in the USSR and will use the earth's natural heat sources at depths of 4000 to 5000 meters to make available more than 1000 megawatts of installed generating capacity. The engineering principle entails the sinking of two wells which will lead to an underground chamber in which a temperature of at least 200°C prevails. Water is pumped down one shaft and is converted to steam in the underground "boiler." This in turn escapes to the surface via the second shaft, where it will operate turbines. At the intended construction site there are sufficiently large quantities of usable water in the ground (including the aforementioned chamber) and on the surface. Similar conditions also exist in the Carpathians. [Text] [Bonn DIE WIRTSCHAFT DES OSTBLOCKS in German 22 Nov 79 p 1]

CSO: 1826

AZERBAIJAN OIL REFINERIES STRUGGLING TO SAVE ENERGY

Baku VYSHKA in Russian 12 Oct 79 p 3

[Article compiled by VYSHKA inspection team: "Shut Off All the Leaks"]

[Text] Oil refineries are large consumers of electricity and heat, and production efficiency and the refineries' economic indicators depend largely on how efficiently they are used. A public review of how efficiently raw and other materials and fuel-energy resources are used is now underway. What steps are being taken at oil refineries to save resources? A VYSHKA inspection team examined this question. The team consisted of Mirza Baba Abtalby Ogly, Hero of Socialist Labor and chief of NBNZ [Novobaku Oil Refining Plant] installation imeni Vladimir Il'ich; A. Salimov, senior operator at the plant imeni A. G. Karayev; B. Ishkhanov, fitter at the "Neftegaz" plant; I. Ansheles, senior inspector at the "Energosbyt"; O. Nechipurenko, VYSHKA correspondent. What did the inspection reveal?

First, it should be noted that after visiting many shops and technological installations, we are convinced that oil refinery workers are doing a great deal to save as much heat, electrical and thermal energy as they can to meet the needs of the national economy. At the plant imeni 22nd CPSU Congress, for example, the initiative of "Working Two Days Per Month on Electric Energy Conserved" was born early in the 10th Five-Year Plan, and during the first nine months of this year they have saved about two million kilowatt-hours. Based on this indicator, the plant collective has won the competition among branch enterprises. A two-month campaign to save steam recently brought good results.

Quite a bit is being done to save resources at the NBNZ imeni Vladimir Il'ich at at the plants imeni A. G. Karayev and "Neftegaz." Long among the laggers, shop No 5 at the plant imeni A. G. Karayev has begun working on its "own" fuel, that is, on fuel obtained from production waste.

The struggle to reduce expenditures of energy resources intensified after the recently adopted CPSU Central Committee and USSR Council of Ministers

decree "On Providing the National Economy and the Populace With Fuel, Electrical and Thermal Energy in the Autumn and Winter of 1979-1980." The republic Ministry of Petrochemical Industry as a whole is now credited with having saved 5,000 tons of comparison fuel, 58,000 gigacalories of steam and 11 million kilowatt-hours of electricity.

Still, not one of the branch's Baku refineries has yet achieved the level of economy planned in accordance with the CPSU Central Committee and USSR Council of Ministers decree -- three percent of the energy resources being consumed. What are the reasons for the lag?

First, and probably among the basic reasons, the operation of technological installations at idle due to interruptions in supplies of raw material and reagents. At the plant imeni 22nd CPSU Congress alone, installations were idle for more than a thousand hours, spending upwards of 5,000 tons of fuel 15,000 gigacalories of steam and about 700,000 kilowatt-hours of electricity uselessly.

We asked A. Safarov, chief power engineer of the ministry, why this happened.

"We have asked plant leaders many times about the necessity of stopping technological installations because there is no raw material," he replied, "but our demands are unfortunately not being carried out everywhere."

It is somewhat strange to hear this explanation from a chief power engineer. Is the ministry really unable to properly influence the plant director to carry out its instructions?

Some installations are operating at reduced productivity, which also leads to fuel overexpenditure. Installations of the second shop at the NBNZ imeni Vladimir Il'ich, for example, produce gasoline components and have wasted over 7,500 tons of fuel so far this year due to reduced productivity.

However, fuel is not even always conserved where it is comparatively easy to do so. On the day of our check, the two thick black columns of smoke from pipes of the old "Neftegaz" boiler plant near Shaumyan subway station clearly showed that fuel is not being completely burned here. We wanted to find out what was the matter.

"There was a blunder," explains senior stoker G. Kavin. "It was demanded that the steam pressure be raised, so we decided to 'press'."

The old boiler is primitively equipped. Perhaps things are better with the new boiler the plant is so proud of? Well, it turns out that not all is well there either. Although the boiler is equipped with automatic devices enabling one to control gas use as a function of boiler pressure, assistant stoker N. Orudzhev for some reason opens the valve by hand.

"I've worked here for a long time," he says, "but I can't remember these automatic devices ever working right."

The attitude towards gas at enterprises of the Ministry of Petrochemical Industry is generally cool. Thus, in August, the republic Glavgaz sought out opportunities for allocating ministry enterprises one-third more of the blue fuel than was initially planned for. However, plants used 10 percent of that amount of gas only with difficulty.

Oil refinery workers claim that using gas creates additional difficulties in maintaining the technological flow. "It is simpler with liquid fuel," some openly admit, not aware that such an approach is far from being in the interests of production.

There are still oversights in technical rate-setting for fuel expenditures, in operating technological equipment and instrumentation, at the NBNZ imeni Vladimir Il'ich. For example, at the plant's No 16 technological installation, insufficient sealed mixed-flow nozzles are used in the flameless furnaces, resulting in some of the fuel being discarded in the form of flares.

On orders from the Ministry, all devices monitoring fuel expenditure in the No 1 shop were to have been calibrated by early August. But that work has still not been done. It is therefore no accident that, according to ministry data, the plant burned in August 100 tons more mazut and 1,400 tons more gas in its furnaces than was recorded by the instruments.

Another example. Back in March, representatives of the USSR People's Control Committee ordered that an additional heat exchanger and recovery units be installed on a number of technological installations at the plant imeni 22nd CPSU Congress. This same demand was made in an order issued in April by the republic Ministry of Oil Refining and Petrochemical Industry. However, V. Kosenkov, the plant's deputy chief power engineer admits that little has yet been done in this direction.

An uninterrupted supply of thermal energy, the live, superheated steam necessary to nearly every technological process, is at least as important as the fuel supply. But many enterprises are waging the struggle against losses of steam insufficiently energetically. For example, we counted dozens of white clouds over the smokestacks at the NBNZ imeni Vladimir Il'ich. At the No 35 gasification installation, a hissing stream of steam enveloped the entire technological center.

"What can you do? The equipment has to be shut down for a long time for major overhauls; otherwise you don't eliminate the leakage," explains I. Kagramanyan, the installation chief. Then he hastens to add: "There is leakage, but still, we have saved about 600 tons of production steam already since the start of this year."

We visited the ELOUAVT [Electric-Desalinization Installation and Atmospheric-Vacuum Tube Unit] Steam to meet the technological needs of the refinery is to be produced using exhaust gas heat at this powerful, modern facility, which was built on the basis of a plan for retooling Baku oil refineries. We wanted to find out how things were going here, and it turns out that only one of the two

heat-utilizer boilers is operating. The reason is a shortage of chemically purified water from the neighboring TETs-2.

At the same time, we managed to establish that a significant quantity of this water flows from the boiler into the sewer system, that it is continuously blown out. It was not possible to elucidate precisely how much water is being lost, since the devices which could record water expenditure have not been installed here. V. Glaz, deputy chief power engineer at the plant, thinks it is less than two percent of the water used by the boiler. At the ministry, we were quoted a different figure -- 30 percent.

No matter what the real situation is there, the plant spends 720,000 rubles per year to acquire thermal energy from the TETs-2 due to its inefficient use of the utilizer boilers. And the TETs-2 burns 25,000 tons of comparison fuel to produce that amount.

We have already noted that quite a bit has been done recently at the plant imeni 22nd CPSU Congress to use steam efficiently. However, while at shop No 6, we discovered a large steam leakage in the main going from the TETs -- approximately 6,000 gigacalories. It was explained that in order to eliminate it, production would have to be stopped for a time at two shops. Enterprise leaders were not prepared to do that, so the steam continues to be discharged into the atmosphere.

Quite a bit of thermal energy is being lost through flange connections and at technological installations of shop No 7. Its chief, D. Kuliyev, has been fined repeatedly, but the situation is changing for the better slowly.

The CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Management Mechanism on Improving Production Efficiency and Work Quality" attaches great importance to the efficient use of material, labor and financial resources, to intensifying conservation practices and eliminating all losses in the national economy.

Governed by this decree, the leaders of the ministry and enterprises, and people's control posts and groups are called upon to intensify their monitoring of the expenditure of fuel and energy resources, to close all channels of losses.

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RSFSR RESIDENCES POORLY PREPARED FOR WINTER

Moscow SOVETSKAYA ROSSIYA in Russian 28 Sep 79 p 2

[Text] The harsh frosts of last year were a severe test, as is known. Unfortunately, a number of cities did poorly on the winter exam this past year. Were serious conclusions drawn? This September, patrols, jointly with workers of the editorial staff, checked on preparations for this winter. The "swoop" brigade consisted of: L. Yudenich, sector chief of the RSFSR People's Control Commission; Ya. Klyuykov, inspector in the Kazan' People's Control Commission; Ye. Godlevskiy, sector chief of the Yaroslavl' People's Control Commission; P. Mordovkin, deputy chairman of the Kuybyshev People's Control Commission; I. Trantsevskiy, people's control worker in Tyumen'; and correspondents M. Zaripov, V. Zlobin, A. Bochkarev, Yu. Burov and Ye. Syrtsov.

A Lesson Not Learned. What do last year's lessons bind us to? First of all, it is good to prepare housing for any possible harsh cold, to maintain houses in a state of good repair. But the hot summer apparently has melted memories of previous miscalculations among some housing and municipal services leaders. Here are just a few examples.

Last year, Saratov Ship Repair Plant workers living on B. Zatonnaya Street, No 23, appealed to the editorial staff of SOVETSKAYA ROSSIYA. "We have been living here for 16 years During that time, no repairs have been made. The building is becoming unfit for habitation. In many apartments, the winter temperature does not get above 12°C."

Then commissions took to checking out this complaint in the indicated house; they felt the cold radiators, sighed, got indignant, drew up documents that promised much...but everything remained as before. We were convinced of this when we visited the house today.

It is hard to even evaluate the answer patrol workers got in the construction maintenance sector of the Saratov city housing administration:

"True, under the agreement we were to have finished repairs on this house prior to 10 July. But we were unable to. This is not a house in our own department, and we have many facilities of our own...."

A very common answer, as the tendency to divide housing into "ours" and "theirs" is also observed in other cities. In Kazan', for example, people were especially bad off last year in just such departmental houses (of which there is nearly two-fold more than housing of local Soviets). The picture continues to be alarming, as we are still quite far from having all departmental housing fully ready for the winter. Some landlords are still fiddling around with boilers, others do not have the heating lines in proper order, and still others have forgotten their houses.

In Yudino, a railroad workers settlement, the largest boiler, which supplies heat to a multistory house, is not ready. Yudino depot leaders responsible for supplying apartments with heat say that no work was done before October.

A garage equipment plant "re-examined" its own plans for preparing housing for the winter; incidentally, those plans were approved by local Soviet ispolkoms. Last winter, residents of many houses complained to them about the heat, or more accurately, the absence of heat. This summer, it was decided to overhaul the heating system, 40,000 rubles being allocated for this. However, as the sun shone warmer and warmer, plant leaders changed their plans and finally decided to limit themselves to a little mending. The cold weather is imminent, and they have not even done that.

We are also put on the alert by the fact that such an attitude towards preparing departmental housing for the winter is being tolerated. The Kazan' city Soviet ispolkom has not dared to "exercise its authority" and call enterprise and institution leaders to order.

The Karelian ASSR Ministry of Housing and Municipal Services is preparing for winter wretchedly. The branch's Russian staff directed its local organizations to finish all work by 1 September. However, only half of the 4,450 houses of the local Soviets in Karelia have been accepted for operation this winter! Patrol workers have reported that even in the houses accepted, not all subsurface work is finished yet.

In many cities, the newly-introduced readiness certificates have not been signed by housing operators and public representatives, so an effective method of monitoring the work of municipal services is not being used. But this is a very needed method, as information on repair quality often fails to correspond to reality, to put it mildly. In Petrozavodsk, for example, patrol workers investigated five houses accepted as "good." All five had serious unfinished heating and water-supply system work, defects in roof and floor repairs, and so on.

An alarm signal. Patrol workers think the RSFSR Ministry of Housing and Municipal services places too much faith in comforting local reports, that it

has not organized effective checks on implementation of its own orders. At the same time, patrol workers from Tyumen', Kostroma, Yaroslavl', Kuybyshev and elsewhere report alarming news about housing disrepair.

Wasted Calories. The preparation of heating supply systems in many cities is causing particular alarm. Back in July, the Yaroslavl' city people's control committee noted that the new TETs-3 hook-up had not been tested and that there was a great deal of unfinished work on the heating system being built by the "Yargorzhilstroy" trust. In September, V. Balakin, the manager of the trust, stated at a meeting of the city committee that the unfinished work had basically been eliminated, but that he was being let down by a subcontractor, the Lyuberetskiy special administration of the "Montazhteploizdeliya" trust, which refused to make pipeline insulation. It was clear to everyone that a heating system without insulation was just pipe. However, neither the city Soviet ispolkom nor the "Yarenergo" association, responsible for preparing the entire city economy for the winter, has taken decisive measures as of now.

And preparation of the heating supply system in Kuybyshev is far from complete as well. After reporting successful fulfillment of plan assignments for the first eight months of the year in terms of basic technical-economic indicators, including that for heat distributed, leaders of the Kuybyshev GRES failed to ensure fulfillment of more than 30 measures outlined by the plan for major overhaul and equipment replacement. For example, I. Uvarov, director of the Bezymyanskaya TETs, and V. Mozgunov, its chief engineer, approved a precise schedule of station equipment repairs. But judging from what was actually done, this schedule was only "for show," to demonstrate activeness. This very thing was borne out by the fact that only four of the 17 boilers and turbine generators which were to have been overhauled are ready for operation. The situation is similar at the Tol'yatti TETs.

Since spring now, patrol workers of the Kuybyshev city and rayon people's control committees have been conducting large-scale "swoops" on city enterprises and apartment buildings and reminding the leaders of all organizations and departments about the harsh trials of this past winter, about the necessity of readying all district heating stations and lines well ahead of time. City-wide, the level of readiness for the winter is above last year's. However, only 8,000 of the more than 10,000 city subscription heating systems are ready for operation, and heat supply systems are incomplete for 11 schools, 33 kindergartens and day nurseries, and 15 academic institutions. This would seem a small number for a city like Kuybyshev, but when it is a matter of the health and comfort of people, we must not deal in percentages -- each house, every apartment, and every place in which we live and work must be provided with heat prior to the onset of the cold.

The harshness of the Siberian winter is well-known. Especially in Siberia, thought should be given to the cold weather well ahead of time. However, the cool attitude Tyumen' leaders take towards heat is bewildering. By the start of the current heating season, five of the six heating systems built in the new southwestern microrayons of the city were not ready. For the

city as a whole, half of the 1,400 heating systems are not ready. The city has tens of kilometers of interapartment, outside and primary heating systems. The bulk of them are in sad shape, in need of thorough repair. A portion of the network belongs to the TETs; other parts are included in the city heating systems balance. But neither are ready for the winter. When an accident happens, residents left without heat are generally unable to find out who is to blame. TETs leaders but the blame on the city systems, who in turn criticize the city housing administration, which is blamed for everything....

It would seem, given the strained heating situation in the city, that every calorie of heat would be counted and used thriftily. But the fact is that last year, 600 cubic meters of hot water disappeared from the city's mains each hour. Where did it go? Some, quite a bit in fact, went to create underground warm lakes, dripping through pipes grown thin. Moreover, every industrial enterprise tried so hard to heat up its own system to get steam that....

And the situation remains the same. A check showed that only 17 of the city's 67 industrial enterprises were concerned about saving heat.

At the beginning of the last heating season, our newspaper wrote about these same shortcomings in an article "In Heat and In Cold." At that time, V. Zhevtui, construction department chief for the Tyumenskaya Oblast party committee, and Yu. Lobov, city party committee secretary, hastened to say, in response to the criticism, that the shortcomings noted in the article had existed, but that they had been eliminated, and that there were no longer any problems with the heat supply. The editors received a similar report from the city ispolkom. The shortcomings were admitted, but those at fault were not only not punished -- they were not even pointed out. Most importantly, after the responses to the editors, the city's heat supply continued to be unsatisfactory. And what is the price of such formal replies?

Patrol workers consider it necessary to state the responses of leaders of a number of power enterprises: they say everyone is demanding an increase in the heat supply to apartments, enterprises and institutions, but that energy resources are not limitless. All true, but patrol workers pose the question not of increasing the heat and energy output, but of reducing losses of heat and energy, of using them carefully. In fact, the energy and heat producers themselves permit an enormous squandering of energy. We have already refered to Tyumen'. But things are no better in Petrozavodsk either. It was revealed by a check that numerous instances of unfinished work which hinder normal operation and which lead to considerable losses have been discovered in the 60 boilers overhauled and accepted with an evaluation of "good." Characteristically, many boilers of the "Karelkommunenergo," for example, are operated without procedure charts and a majority of them do not have devices to record the energy produced and distributed. Hot water losses in the mains are very high (277,200 tons of hot water lost just in the 1978-1979 season, the equivalent of wasting 3,300 tons of ideal fuel).

Patrol workers consider the question of conserving heat and energy to be extremely urgent. It demands the constant, keen attention of all people's control committees. Not a single calorie of heat spent needlessly -- that is how this work must be set up everywhere.

Firewood...By Spring. As the "swoop" showed, plans for preparing for the winter had been worked out in advance in the local Soviet ispolkoms. But the primary shortcoming in their implementation is extreme slowness, poor work quality, and a lack of strict inquir, of responsible persons. Heat is a topic at meetings of city and rayon winter-preparation staffs (which have been created in many cities), and schedules and time-tables have been drawn up. But patrol workers focused attention on the important fact that there is almost never any reference to supplying the individual sector with fuel.

Like many other cities, Kazan's heating systems connect both large buildings and private dwellings, which must also be provided with heat, coal, firewood. The owners of private residences have turned to A. Abramov, director of the "Kazmezhgorraytopsbyt" office. Its clients are listened to courteously, applications are placed in a special journal...but customers are asked to wait a bit for the orders to be filled. How long? The client agrees to wait a week or 10 days...and is scheduled for at the very least half a year later. More than 2,000 applications for firewood have been taken, but only 1,040 people had received fuel by mid-September.

Procedures at the "Kazmezhgorraytopsbyt" coal and firewood warehouses are strange. Under an agreement with the Tatarskiy Transport Administration, a client pays the cost of the fuel and motor transport and then waits for the vehicle of coal or wood to honk at the gates of his house. On 10 September, for example, the transport agency was to have allocated 10 vehicles to haul firewood, but it sent only four. And it's that way every day. Despairing customers walk beside stacks of firewood catching "leftists."

On 18 September, we at the newspaper requested an application to find out what the wait was for a vehicle with fuel. The answer we got was: "Not before the last day of winter, 27 February 1980."

You could say leaders of the Kuybyshev Railroad are supplying their own associates better than last year: coal, briquettes and firewood have been brought in well ahead of time. But here, too, not everything has been well thought out: instead of sawn firewood, railroad workers are being offerred five-meter logs, which can't be gotten to without cranes and tackle, which are not available at the fuel warehouse. And the railroad administration's order that transport be made available regularly to haul fuel is not being carried out, so people have often been forced to turn to those same "leftists."

The above examples testify to the fact that in a number of cities, the "global" plans for preparing for the winter have ignored specific people and concrete needs.

The frosts cannot be made to wait. And city Soviet ispolkoms, departments and services of the RSFSR Ministry of Housing and Municipal Services are obligated to meet them fully armed. The "swoop" showed that time has already been lost in many places. It is all the more important today to focus all our efforts on unconditional fulfillment of the plans for preparing for the winter.

Local patrol workers must monitor this most important work sector daily.

11052
CSO: 1822

UKRAINIAN INDUSTRY WASTING ENERGY AND HEAT

Moscow PRAVDA in Russian 20 Oct 79 p 3

[Article by B. Mayboroda, Deputy Chairman of the Ukrainian SSR People's Control Committee (Kiev): "But What Does the Meter Read?"]

> [Text] Production workers sometimes complain that monitors check preparations for the cold periods using "winter" measures in the middle of summer or in the fall. When the frosts strike, they can figure out for themselves how to save electricity or fuel.... Need it be said that such an approach is fundamentally in error. For example, in the second quarter alone, 123 republic enterprises wasted about 160,000 tons of comparison fuel. some 75 plants and factories wasted 125,000 gigacalories of heat, and 119 enterprises burned 170 million kilowatt-hours of electricity unnecessarily. And that was in the warmer months. What will happen in the winter?

In analyzing such facts, we become convinced that squandering power resources is a direct consequence of the inefficiency of individual leaders, of an irresponsible approach to meeting economy assignments. Some managers justify their actions by saying that expenditures on electricity and heat are just a "trifle," only 1.5 to two percent of output prime cost....

The ministries, foremost, would seem responsible for obtaining satisfaction from negligent administrators. The CPSU Central Committee and USSR Council of Ministers decree on improving planning and perfecting the economic mechanism does in fact set industry workers the task of saving material and energy resources in every way possible. But strange as it may seem, certain departments close their eyes to squanderers and even conceal mismanagement. That is how leaders of the republic ministries of ferrous metallurgy, light industry, building materials, and chemical industry sometimes behave. For example, deviations from electric power expenditure norms were discovered at the "Krivorozhstal'" and Kiev Oxyacetylene Plant and the "Polimer" and "Kirovogradgrafit" production associations, all subordinate to them. However, instead of investigating in detail what has occurred, they took the easiest route and raised the limits for the violators.

Is that not why the leaders of a number of industrial enterprises of the republic "forget" to trouble themselves at the proper time about saving energy, as for example by improving production technology, rate-setting and recording resources use? And when the monitors arrive they try to justify their shortcomings by citing objective difficulties.

At the same time, when checked, the "objective" reasons generally turn out to be not all that insurmountable. During the course of the checks, patrol personnel often noted fundamental oversights, including a lack of means for monitoring energy resources use. Managers shrug their shoulders, saying there are no automatic instruments. In fact, there are far too few meters at Ukrainian enterprises for accurately measuring heat and gas expenditures. But that does not mean the status of the energy balance cannot be recorded.

An example. Electric power expenditures per unit of output have long been determined in shops at the "Azot" production association in Cherkassy not with instruments, but by mechanically "spreading out" overall expenditures by the enterprise. Instances of extravagance have been revealed more than once here. However, they have not succeeded in establishing those specifically to blame. Shop chiefs cite the absence of electric meters. Patrol workers have repeatedly warned the administration that such a situation is impermissible. But their remarks have gone unheeded. And it was only when workers of our committee joined in the check that both meters and people responsible for their operation were found in every shop.

A situation in which the rivers of power flow at times without being recorded exactly cannot but disturb leaders responsible for producing measuring equipment. The Ministry of Instrument Making, Automation Equipment and Control Systems and the planning organs on whom the prompt provision of enterprises with improved equipment for monitoring expenditures of heat, gas and electricity largely depends must have their say. It is evidently time to pose the question of creating a kind of "code of requirements" to be followed by all those directly involved in producing apparatus monitoring the expenditure of energy resources and by all those responsible for the operation of individual monitoring units.

Questions of setting up the production of both series-produced and also promising models of electrical machinery, meters and other types of electrical equipment need to be decided very responsibly. One top-priority task must be the demand for maximum economy of operation. Unfortunately, this is not always achieved in practice. For example, the Poltava special light-source design bureau, jointly with the gas-discharge lamp plant, finished work back in 1975 on improving mercury lamps which would ensure considerably better illumination without additional energy requirements. The plant has mastered their production. However, production of the new lamps is not planned for this year. And the enterprise has resumed manufacturing lamps of outmoded design, although their use will require roughly 100 million kw-hr more electric power per year.

Of course, in addition to solving strictly technical problems, much can be done now by making extensive use of the results of the creative search by

patrol personnel. A review of the use of reserves for saving material and energy resources, approved by the Ukrainian Communist Party Central Committee, is underway in the republic. More than nine million persons are already participating in the review, which is being conducted by the people's control organs, jointly with trade-union and Komsomol organizations and the editorial staffs of newspapers, television and radio stations. In summing up the results of the checks, patrol personnel will offer for discussion by the review commissions specific recommendations on saving energy resources. Implementation of the workers' proposals last year alone enabled us to save more than 800 million rubles. And now, according to all the data, the sum will again be considerable.

With the onset of the cold period, republic people's monitors are striving to track more zealously the expenditure of fuel and energy resources and to reduce losses to a minimum.

11052
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ENERGY CONSERVATION

KAZAKHSTAN CITIES SLOW TO PREPARE FOR WINTER

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 12 Oct 79 p 1

[Editorial: "Readying Cities for Winter"]

[Text] We are nearing the end of the warm time of year, and it is time to finish preparing the cities for winter. What was done during the summer? What is the state of readiness of the housing, district heating systems and utilities? Has sufficient fuel been set aside? These and other questions now face the Soviet of People's Deputies ispolkoms. And those which are organizing checks of the most important sectors of the city economy, who are revealing oversights and shortcomings and taking steps to eliminate them rapidly, are acting correctly. It is important to assure ourselves that everything has been done reliably and that there will be no breakdowns during cold periods, that the rhythm of urban life will not be disturbed.

Much work was done in republic cities throughout the summer to prepare their economies for operation under winter conditions. New heating facilities were built, heating and hot-water supply mains and internal systems were expanded and renovated; this permitted significant improvement in the supply of heat to apartment housing.

Many local Soviet party committees and ispolkoms checked the status of the city economy in early autumn and then took additional measures aimed at completing pre-winter work as quickly as possible. Thus, the Alma-Ata city party committee reviewed progress in preparing the city in early September and revealed a number of serious shortcomings; it set specific tasks for the lagging collectives and exercised daily supervision of them. In the basic sectors, conditions improved. The Pavlodar city ispolkom organized this work skillfully. For several months now, it has had an operations staff to prepare the housing and municipal services system for the winter. This staff is headed by ispolkom deputy chairman G. Mogilevtsev. The primary merit of the staff is that it works out and implements a plan to improve the reliability of the heating systems and to renovate them. For the first time, apartment and house systems were pressure-tested at double the [normal] pressure, so all flaws were revealed and eliminated in good time.

However, there are cities which are losing valuable time. They include Karaganda, which has not finished building the heating mains from TETs-3, so the new "Vostok-1" microrayon receives its heat with delays, and there is major unfinished work still to be done on the mains themselves. And they include Kzyl-Orda, whose "Oblremstroy" has failed to meet the plan for preparing outside heating systems for winter. The city lacks sufficient water for household needs. The reservoir which was to have solved this problem has been under construction for about nine years, and the end is not in sight. All is not well with heat and water supplies in Arkalyk. Every winter, city residents experience difficulties, but the rebuilding and adjustment of the apartment heating and water supply systems is moving forward slowly.

Party organs and local Soviets must not be content with such an attitude. They are obligated to hold strictly responsible those who have been remiss in performing their duties and to help in speeding up this work.

A complex urban economy requires the constant attention of the Soviets of People's Deputies and the coordinated actions of all municipal services, enterprises and organizations involved in operating and maintaining existing facilities and building new ones. A shortage of heat in an apartment, enterprise shop or store means reduced labor activeness and causes absences due to colds. That is why it is very important now to check once again the state of readiness of housing for the winter, including departmental housing, and the preparedness of enterprises, institutions and services responsible for the operation of utilities; shortcomings discovered must be eliminated and everything necessary must be done to supply houses with heat.

It must be recognized that housing maintenance remains poor in the construction-maintenance administrations. KAZAKHSTANSKAYA PRAVDA criticized one of them, the RSU [construction-housing administration] of Sovetskiy Rayon in Alma-Ata, for doing a major overhaul on house No 43 on Kosmonavtov Street in a prolonged, disorganized fashion, with defects, and inconveniencing apartment renters. The editors received reports that the repairs were finished, while in fact the defects had not been eliminated and instances of "window-dressing" were discovered. The major overhaul on house No 43 on Shevchenko Street was no better. In spite of the fact that it has been in progress since last December, the work is not yet complete. Residents of this house have been without hot water until quite recently.

The ispolkoms of Alma-Ata rayon Soviets must strengthen their supervision of the activity of construction-maintenance administrations, be more demanding of their workers as to maintenance quality, and educate them in a spirit of responsibility for the work entrusted to them.

The house administrations and housing-operation offices must do a great deal of work to ready housing for the winter. It is their duty to repair roofs, plumbing, inside heating systems, and to involve house residents in keeping up apartments, stairways and corridors properly. Experience shows that the public will participate actively in competing to keep up houses in a model

fashion, to save heat, water and electricity, if explanatory work is done with it.

No less important a matter is supplying the population with fuel. And not all is well here, especially in supplying coal to houses. There usually is not enough transport for this, and people are forced to lose a great deal of time in waiting.

Comprehensive preparation of the city economy, its services, transport and roads, is a concern not just of the Soviets, but of all ministries and departments as well. Each house, no matter with whom it is affiliated, and each institution and enterprise -- all must be in a high state of readiness.

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KASPMORNEFT' DRILLING RIG DELIVERED

Baku VYSHKA in Russian 17 Nov 79 p 1

[Article by V. Gol'tsev: "Semi-submersible Drilling Rig on the Caspian"]

[Text] Yesterday three high-capacity tugs, the "Samur," "Araks" and "Mamedali Aliyev" of the Kaspneftegazflot Administration delivered from Astrakhan' to Baku the floating semi-submersible Kaspmorneft' drilling rig, built on order from the USSR Ministry of the Gas Industry by the Rauma-Repola firm in Finland.

This unique structure is fundamentally different from the installations of the self-lifting type now operating on the Caspian. The whole huge hull of the platform--its area is about 3,000 square meters--is mounted on two paired pontoons, which during drilling operations will be loaded under water to a depth of almost 14 meters. A complex system of anchor mechanisms will insure that the whole unit is kept afloat even in stormy weather.

"There is no similar installation in the Soviet Union," states the chief of the production division of Kaspburneftegazprom. "This makes it possible for our collective to drill exploratory wells to a depth of 6,000 meters with the thickness of the water up to 200 meters. After completion of the start up and adjustment operations the Kaspmorneft' will go to the deep-water section of the Site imeni 28 April, where it is proposed to open a layer at the full capacity of the productive thickness."

We will note that the large sailing capacity of the unit--its height from the water line is 24 meters--and unfavorable weather created many difficulties for the sailors during towing. But the crews of the vessels, headed by experienced captains V. Zav'yalov, Yu. Grigor'yev and G. Kaptiy, successfully towed the new installation to Baku.

10908
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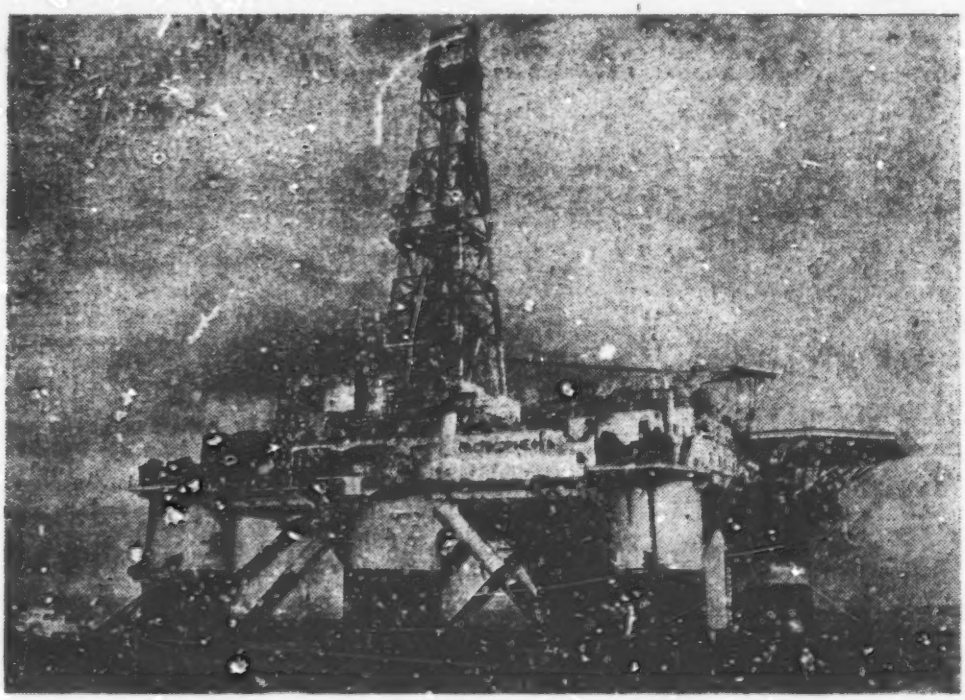
FUELS AND RELATED EQUIPMENT

KASPMORNEFT' DEEP-DRILLING RIG BROUGHT TO BAKU

Baku VYSHKA in Russian 20 Nov 79 p 1

[Article: "For Developing Great Depths']

[Text]



In the photograph: The Kaspmorneft' semi-submersible drilling rig in Baku bay.

On 17 November VYSHKA reported that a semi-submersible drilling rig, which will make it possible to drill a well at a depth of 6,000 meters with the thickness of the water up to 200 meters, had become part of the equipment of the marine prospectors of the deep. The crossing of the rig from Astrakhan' to Baku was completed successfully by a collective under the leadership of Captain Vasiliy Tropin.

10908
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ACCIDENT PREVENTION IN AZERBAIJAN OIL INDUSTRY

Baku VYSHKA in Russian 24 Nov 79 p 3

[Article by Doctor of Technical Sciences A. Mamedov, head of a laboratory of AzNIPIneft': "Shielding Against Accidents"]

[Text] Much work is being done in the drilling organizations of the Azneft' and Kaspmorneftegazprom associations to improve the quality of drilling wells and to reduce accidents. Nevertheless the accident rate during drilling operations remains high here still. It is enough to say that in the last three years 52 wells with a total cost of 84 million rubles have been dismantled in the Azneft' Association. I would like to stress that half of these were the result of accidents connected with casing and drilling columns. There is a similar picture also at drilling enterprises of the Kaspmorneftegazprom All-Union Industrial Association.

All this indicates that providing good-quality, high-strength pipes for the drillholes has great significance in combatting accidents in drilling. However even this does not fully solve the whole problem. It is very important to insure proper preparation for the work of drilling and casing pipes, and for their operation. It can be said without exaggeration that many accidents at the drillholes occur namely due to the scornful attitude of certain workers to observance of the demands of the existing instructions on pipe operation.

As is known, the pipe and tool bases (TIB; trubno-instrumental'nyye bazy) are occupied with questions of preparation of the pipes in the Azneft' and Kaspmorneftegazprom associations. They perform the receipt, storage, assembly, and repair of drilling pipes, and also preparation and provision of drillholes with casing pipes. How do these bases fulfill their tasks?

The rules require the storage of pipes on racks according to type sizes, depending on their technical description. Unfortunately, not all the pipe and tool bases have a sufficient number of racks and the pipes are often stacked on the ground. This, in particular, can be seen in the rolling and repair shop for pipes and turbo-drills of the production maintenance

base of the Siazan' Drilling Administration, and in the rolling and repair shops of the Sangachaly and Peschaninskiy marine drilling administrations.

There are cases when the pipes are delivered to the drillholes without the proper preventive inspection and registration. As a result, in the drilling column there are often pipes with different lengths of service and a different strength group. The lubricant intended for sealing and prevention of wear, scratches and sticking of the joints of the drilling columns is not being used when securing the lock joints. Frequently the configuration of the bottom of the drilling column is violated, which also often leads to unforeseen complications.

It should be noted that in the pipe subdivisions of the associations they are still inadequately concerned with questions of increasing the resource of the efficiency of the drilling pipes: they do not perform deposit welding, the surfaces of tool-joints are not reinforced with a hard alloy, restoration of the worn surface, welding of the blocking rings and so on are not done. The work for restoration of bent pipes leaves much to be desired. So far only approximately five percent of them are actually used. Recently the pipe and tool bases have received more and more pipes of new designs, but the appropriate measuring and cutting tools for repairs and doing the threading on them are lacking almost everywhere.

As is known, the weakest point in the drilling column are the threaded joints. Namely here are failures registered most often. The cause of them is the appearance and development of fatigue cracks during the action of variable loads on the drilling column during the process of operation.

A modern method of inspection, defectoscopy, is widely used in the drilling organizations in order to reveal fatigue cracks and prevent failures. In the Azneft' Association this work is conducted directly at the drillholes by the shop for control and measuring devices and automatic equipment, set up almost 10 years ago. From year to year the shop increases the number of inspected drilling pipes. Thus, in the last five years the volume of inspection was increased two-fold. It would seem that this should reduce fatigue failures to zero. Unfortunately, they continue to occur.

All this indicates that a further increase in the volume of the use of defectoscopy of pipes at the drillholes cannot be considered as efficient. In order to eliminate the possibility of fatigue failures it is necessary first of all to increase the efficiency of inspection, which can be attained only at permanent defectoscopy installations of the pipe and tool bases.

For this purpose, last year the Azneft' Association instructed the Ali-Bayramly Pipe and Tool Base to conduct repeated inspection of pipes condemned directly at the drillholes on a modern defectoscopic unit. In this case 10 percent of the pipes condemned at the base had to be cut for installation and comparison of the sizes of the defect with the readings of the defectoscopy unit. This would have made it possible to classify the condemned pipes, to work out criteria of condemnation and

substantiate the volume of pipe inspection at the drillhole. Unfortunately, so far at the Ali-Bayramly Pipe and Tool Base they have not performed repeated defectoscopy with subsequent cutting of even one pipe. The inspection of drilling pipes after a certain period of their operation at the drillhole is also poorly set up.

This extremely important work, directed at reduction of the accident rate in Kaspmorneftegazprom, is in an analogous position.

The conduct of hydro testing of casing pipes before they are shipped to the drillhole is very important for reduction of accidents. In recent years an increase in the test pressures has made it possible to reduce to a certain degree the number of pipes with defects of factory origin delivered to the drilling brigades. But still for a full guarantee of accident-free operation of the casing columns the test pressures, in our opinion, should be increased. For this, of course, it is necessary to see to it that the pipe and tool bases are equipped with stationary pressing stands with high-pressure pumps, and also with pressing heads of improved design. The priming units used at the present time to obtain a higher pressure do not guarantee either the quality of the hydraulic test or the safety of the maintenance personnel.

Causing serious concern is the fact that in a number of cases defective pipes are lowered into a well being drilled. In the first quarter of this year more than 6,000 meters of casing pipes with gaps in the threaded joint were lowered into 18 wells of the Azneft' Association. In the Kaspmorneftegazprom Association almost 3,000 meters of such pipes were lowered into seven wells being drilled.

We have had a great deal of damage as a result of permitted deviations from the planned designs of casing columns during the construction of wells. Here, as a rule, the deviations are committed to the worst side, that is, instead of the rated pipes, less durable ones are lowered, the diameter of the column is decreased arbitrarily, and so on. All this creates the conditions for deformation of the columns, this makes it difficult to perform grabbing and other operations in them.

At the Kyurovdag site, for instance, lowered in well No. 473, instead of a 219-millimeter pipe with a wall thickness of 12 millimeters of hardness group L, was a pipe with a wall thickness of 10 millimeters of hardness group K, for which the crushing pressure is 1.7-fold less.

Another example. At the Kyursangya site lowered in well No. 291 instead of a 299-millimeter continuous column was a combined one, with a diameter of 299-219 millimeters. Analogous cases have been noted in well No. 76 of the Kyursangya site and in well No. 91 of the Karabagly site. Subsequently all these wells were condemned for technical reasons as a result of collapse of the casing columns.

It is impossible not to direct the attention of the drillers to the necessity of strict observance of the demands of the instructions for rational utilization of imported oil-field pipes. Very often during the preparation, transportation and lowering of imported casing pipes into the wells the drillers do not consider their specific conditions of operation, which often leads to accidents. Such a case occurred, for instance, when drilling wells Nos. 57 and 407 of Kaspmorneftegazprom, where there was a rupture of the sleeve of casing pipes produced by one of the Japanese firms.

Every year the drillers of Azerbaijan have to solve more and more complex problems regarding the prospecting of new storehouses of oil and gas lying at great depths. Therefore the control of the accident rate in drilling is a vital problem. The faster and better wells are drilled here, the more successfully will the problems of stabilization and a further increase in the extraction of natural fuel in the republic be solved.

An important link in this matter is the elimination of accidents due to improper preparation and operation of pipes. Here it is extremely necessary to perform as rapidly as possible the renovation of old pipe and tool bases and the construction of new ones in regions that are promising, in the sense of their oil-bearing capacity, and energetically to introduce advanced equipment and technology of preparation and repair of pipes, and widely to use progressive methods of monitoring their quality.

All this, it goes without saying, places serious tasks before the scientists, the designers and the technologists. They are called upon to conduct more in-depth research, to assist the mine cutters more effectively in organizing proper use of the pipes. It is the first duty of the researchers and of the production workers to put a strong barrier in the way of accidents.

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